PB-230 551

POLLUTION OF LAKE MICHIGAN AND ITS TRIBUTARY BASIN. PROCEEDINGS OF CONFERENCE, SESSION (3rd) HELD AT MILWAUKEE, WISCONSIN, MARCH 31-APRIL 1, 1970. VOLUME 1

Federal Water Quality Administration
Washington, D.C.

1 April 1970

DISTRIBUTED BY:

NTIS
National Technical Information Service
U. S. DEPARTMENT OF COMMERCE
5285 Port Royal Road, Springfield Va. 22151

PB 230 551

THIRD SESSION
OF THE
CONFERENCE
IN THE MATTER OF POLLUTION OF LAKE MICHIGAN AND ITS TRIBUTARY BASIN

held in
Milwaukee, Wisconsin
March 31 - April 1, 1970

TRANSCRIPT OF PROCEEDINGS

Reproduced by
NATIONAL TECHNICAL
INFORMATION SERVICE
U S Department of Commerce
Springfield VA 22151

TABLE OF CONTENTS

PAGE

Introduction - M. Stein 5

Governor W. Knowles 6

Governor R. Ogilvie 11

Opening Statement - M. Stein 17

J. C. Devitt 21

F. Mayo 29

J. F. Carr 32

C. F. Lindholm 44

W. G. Stewart 58

C. Fetterolf 80

C. Pemberton, Jr 99

C. Risley, Jr 107

R. D. Leary 117

M. Gamet 122
146
153

R. E. Scheible 138

R. Knopf 148

D. Robb 168

T. G. Frangos 174
217

TABLE OF CONTENTS (Continued)

PAGE

F. H. Schraufnagel.............................. 174

J. F. Wilson.................................... 236

F. Schnanig..................................... 243-A

K. Lehner....................................... 253

M. T. Beatty.................................... 272

C. W. Klassen................................... 292

Mrs. L. Botts................................... 375

H. W. Poston.................................... 388

Mrs. E. L. Johnston............................. 395

J. C. Vaughn.................................... 418

P. E. Miller.................................... 493

F. B. Frost..................................... 557

E. Jackson...................................... 663

Summary... 668

- - -

conference report of

The Third Session of the Conference on the Matter of Pollution of Lake Michigan and its Tributary Basin convened at 9:30 o'clock, on March 31, 1970, at the Grand Ballroom, Pfister Hotel & Tower, Milwaukee, Wisconsin.

includes statements, discussions, and recommendations for: pollution abatement, pesticides, waste treatment and disposal, and related information for Illinois, Indiana, Michigan, and Wisconsin

PRESIDING:

Mr. Murray Stein
Assistant Commissioner for Enforcement
Federal Water Pollution Control Administration, U.S.
Department of the Interior
Washington, D. C.

CONFEREES:

Francis T. Mayo
Regional Director, Great Lakes Region
Federal Water Pollution Control Administration, U.S.
Department of the Interior
Chicago, Illinois

R. J. Schneider, Alternate
Deputy Regional Director, Great Lakes Region
Federal Water Pollution Control Administration, U.S.
Department of the Interior, Chicago, Illinois

Clarence W. Klassen
Technical Secretary
Illinois Sanitary Water Board
Springfield, Illinois

Blucher A. Poole
Technical Secretary
Indiana Stream Pollution Control Board
Indianapolis, Indiana

CONFEREES (Continued):

Ralph W. Purdy
Executive Secretary
Michigan Water Resources Commission
Lansing, Michigan

Thomas G. Frangos, Director
Wisconsin Department of Natural Resources
Madison, Wisconsin

AIDES TO ABOVE:

Jacob D. Dumelle
Basin Director, Lake Michigan Basin Office
Federal Water Pollution Control Administration
Chicago, Illinois

John A. Beale
Deputy Secretary
Wisconsin Department of Natural Resources
Madison, Wisconsin

Benn J. Leland
Sanitary Engineer
Illinois Sanitary Water Board
Chicago, Illinois

Carlos Fetterolf
Aquatic Biologist
Michigan Water Resources Commission
Lansing, Michigan

Donald Mackie
Assistant Secretary
Wisconsin Department of Natural Resources
Madison, Wisconsin

Perry E. Miller
Director of Bureau of Engineering
Indiana State Board of Health
Indianapolis, Indiana

ALSO PRESENT:

Honorable Richard B. Ogilvie
Governor of Illinois
Springfield, Illinois

Honorable Warren P. Knowles
Governor of Wisconsin
Madison, Wisconsin

PARTICIPANTS:

Marvin T. Beatty
Professor, Soil Science Department
University of Wisconsin
Madison, Wisconsin

Mrs. Lee Botts
Open Lands Project
Chicago, Illinois

John F. Carr
Chief, Environmental Research
Bureau of Commercial Fisheries
Ann Arbor, Michigan

James C. Devitt
State Senator
Four-State Legislative Commission
on Pollution of Lake Michigan
Wisconsin Legislature
Greenfield, Wisconsin

Carlos Fetterolf
Aquatic Biologist
Michigan Water Resources Commission
Lansing, Michigan

Thomas G. Frangos
Director, Wisconsin Department
of Natural Resources
Madison, Wisconsin

PARTICIPANTS (Continued):

Francis B. Frost
Chief Engineer, Water Resources Commission
Michigan Department of Natural Resources
Lansing, Michigan

Edward Jackson
Citizen
Milwaukee, Wisconsin

Eileen L. Johnston
Citizen
Wilmette, Illinois

Clarence W. Klassen
Technical Secretary
Illinois Sanitary Water Board
Springfield, Illinois

Lt. Commander Richard Knopf
Management Department
Naval Facilities Engineering Command

Honorable Warren P. Knowles
Governor of Wisconsin
Madison, Wisconsin

Ray D. Leary
Chief Engineer & General Manager
Milwaukee Metropolitan Sewer Commission
Milwaukee, Wisconsin

Kenneth Lehner
Superintendent of Chemical Services
Wisconsin Electric Power Company
Milwaukee, Wisconsin

Curt F. Lindholm
Assistant State Conservationist
Soil Conservation Service -
U. S. Department of Agriculture
Madison, Wisconsin

PARTICIPANTS (Continued):

Francis T. Mayo
Regional Director, Great Lakes Region
Federal Water Pollution Control Administration
Department of the Interior
Chicago, Illinois

Perry E. Miller
Director of Bureau of Engineering
Indiana State Board of Health
Indianapolis, Indiana

Honorable Richard B. Ogilvie
State of Illinois
Springfield, Illinois

Carlysle Pemberton, Jr.
Director, Office of Technical Programs
Great Lakes Region
Federal Water Pollution Control Administration
Department of the Interior
Chicago, Illinois

H. W. Poston
Commissioner, Department
of Environmental Control
City of Chicago
Chicago, Illinois

Clifford Risley, Jr.
Director, Office of Research and
Development, Great Lakes Region
Federal Water Pollution Control Administration
Department of the Interior
Chicago, Illinois

David C. N. Robb
Comprehensive Basin Planner
Great Lakes Basin Commission
Ann Arbor, Michigan

Robert E. Scheible
Chief Sanitary Engineer
Headquarters, Fifth U. S. Army
Fort Sheridan, Illinois

ATTENDEES:

John R. Aiholzer, Jr.
Legislative Chairman
Milwaukee Audubon Society
951 North 70 Street
Wauwatosa, Wisc. 53213

Joe B. Alexander
Sales
Hydrite Chemical Co.
1237 West Bruce Street
Milwaukee, Wisc. 53204

Raymond E. Anderson
General Manager
North Shore Sanitary District
Dahringer Road
Waukegan, Ill. 60085

John J. Antlfinger
Water Production Supervisor
Milwaukee Water Works
725 West Howard Ave.
Milwaukee, Wisc.

Burton H. Atwood
U.S. Dept. of Interior
2510 Dempster Street
Des Plaines, Ill. 60016

Vinton W. Bacon
Professor of Civic Engineering
University of Wisconsin - Milwaukee
Milwaukee, Wisc. 53201

John A. Beale
Deputy Secretary
Wisconsin Dept. of Natural Resources
P. O. Box 450
Madison, Wisc.

Mrs. Benjamin S. Beall, III
Water Chairman
League of Women Voters
1057 Illinois Road
Lake Forest, Ill. 60045

Maurice F. Bender
Analytical Chemist
Industrial Bio-Test
1800 Frontage Road
Northbrook, Ill. 60062

Mrs. Richard Bentley
League of Women Voters of Lake Forest
1421 Lake Road
Lake Forest, Ill.

Harry V. Bierma
Chairman
Clean Streams Committee
Ill. Audubon Society
1017 Burlington Avenue
Downers Grove, Ill. 60515

R. M. Billings
Director of Environmental Control
Kimberly Clark Corporation
Neenah, Wisconsin 54956

Mrs. George W. Blossom, Jr.
Lake Forest, Ill.

Carolyn Blackwood
2909 South Mabbett Avenue
Milwaukee, Wisc. 53207

Mrs. James Blake
Glencoe League of Women Voters
281 Linden Avenue
Glencoe, Ill. 60022

Carl T. Blomgren
Sanitary Engineer
Illinois Sanitary Water Board
1919 West Taylor Street
Chicago, Ill.

Mrs. Russell Bonynge, Jr.
League of Women Voters - Lake Michigan
1120 Chestnut
Wilmette, Ill. 60091

PARTICIPANTS (Continued):

Mrs. Fran Schnanig
League of Women Voters
Glencoe, Illinois

Francis H. Schraufnagel
Director
Bureau of Standards & Surveys
Wisconsin Department of Natural Resources
Madison, Wisconsin

Colonel William G. Stewart
Chicago District Engineer
U. S. Army Corps of Engineers
Chicago, Illinois

James C. Vaughn
Engineer of Water Purification
Department of Water & Sewers
City of Chicago
Chicago, Illinois

John F. Wilson
Director
Wisconsin Ecological Society
Green Bay, Wisconsin

Colonel James T. White, Jr.
Detroit District Engineer
U. S. Army Corps of Engineers
Detroit, Michigan

- - -

Mrs. Lee Botts
Open Lands Project
53 West Jackson
Chicago, Ill.

R. J. Bowden
Sanitary Engineer
FWPCA, Lake Michigan Basin
Office
1819 West Pershing Road
Chicago, Ill. 60609

Kay Boyle
League of Women Voters
of Milwaukee
7303 West Georgia
Milwaukee, Wisc. 53220

Stephen T. Boyle
Press Secretary to the
Governor
State Capitol
Madison, Wisc.

D. H. Brandt
Consumers Power Co.
1945 Parnall Road
Jackson, Mich.

Thomas Brochhausen
WISN Radio News
759 North 19th Street
Milwaukee, Wisc.

A. W. Brockway
Maukesha League of Women
Voters
Chairman, Water Conservation
425 North East Avenue
Waukesha, Wisc. 53186

John R. Brough
Director, Air & Water Control
Inland Steel Co.
3210 Watling Street
East Chicago, Ind. 46312

Wallace E. Burkee
Mayor
Kenosha, Wisc.

William D. Calhoun
Governmental Affairs Rep.
Youngstown Sheet & Tube Co.
East Chicago, Ind.

John F. Carr
Chief, Environmental Research
Bureau of Commercial Fisheries
P. O. Box 640
Ann Arbor, Mich. 48107

Brian Cislak
WISN News
759 North 19th Street
Milwaukee, Wisc.

Dennis Collins
Representative-at-Large
Grad. Resident Students Accoc. (IIT)
71 East 32nd
Chicago, Ill. 60616

Enrico F. Conti
Asst. to Manager for Environmental
Activities
U.S. Atomic Energy Commission
9800 South Cass Ave.
Argonne, Ill.

Quincy Dadisman
Reporter
Milwaukee Sentinel
10817 N. San Makino Dr. 8W
Mequon, Wisc. 53092

Miriam G. Dahl
Izaak Walton League
Wisc. State Division
5832 North Lake Drive
Milwaukee, Wisc. 53217

Michael Darinich
Chief, Construction-Operations Div.
Detroit District
U.S. Army, Corps of Engineers
150 Michigan Avenue
Detroit, Mich.

Charles T. Decker
Monsanto Biodize Systems Inc.
Midwest Offices
10 South Riverside Plaza
Chicago, Ill. 60606

Senator James C. Devitt
Four-State Legislative
Commission on Pollution
of Lake Michigan
Wisconsin Legislature
5151 South Root River Pkwy.
Greenfield, Wisc.

Charles W. Dougherty
State Program Grants Specialist
FWPCA
33 E. Congress Pkwy.
Chicago, Ill. 60605

Robert E. Drikssen
Thilmany Pulp & Paper
Kaukauna, Wisc. 54911

Jay J. Ferree
WGN-TV
Chicago, Ill.

Carlos Fetterolf
Aquatic Biologist
Michigan Water Resources Comm.
Mason Building
Lansing, Mich.

Hal Fisher
Field Producer
CBS Network News
630 McClurg Court
Chicago, Ill.

Herbert J. Fisher
Aquatic Biologist
FWPCA
1819 W. Pershing Road
Chicago, Ill. 60609

Sydney E. Foster
Sydney E. Foster & Co.
111 W. Washington Street
Chicago, Ill. 60602

Thomas G. Frangos
Wisc. Dept. of Natural Resources
P. O. Box 450
Madison, Wisc.

F. B. Frost
Chief Engineer
Michigan Water Resources Comm.
Mason Building
Lansing, Mich.

Dorotyy A. Fuller
Secretary
FWPCA
1819 W. Pershing Rd.
Chicago, Ill. 60609

Dan R. Galloway
Sales Engineer
The Dow Chemical Co.
600 W. Touhy
Chicago, Ill.

Mark A. Gluege
Boy Scouts, Troop 130
Explorers Post 4
1640 Aldoro Drive
Waukesha, Wisc. 53186

George Gockstetter
Sup't Environmental Mgt.
Republic Steel Corp.
11600 Burlen Avenue
Chicago, Ill. 60617

Chester W. Brobschmidt
Mayor
South Milwaukee
City Hall
South Milwaukee, Wisc. 53172

Marie Hanus
Cost Account
2830 North 78th
Milwaukee, Wisc.

Edward Hausknecht
Project Engineer
Wisconsin Steel Works
2800 East 106th Street
Chicago, Ill.

Paul G. Hayes
Reporter
Milwaukee Journal
Journal Square
Milwaukee, Wisc. 53012

Roy K. Henrichs, Sr.
Operation Comeback President
P. O. Box 117
Muskego, Wisc. 53150

Constance Herman
Ill. Federation of Sportsmen's
Clubs
13005 S. Western Ave.
Blue Island, Ill.

Fred Herzog
Professor of Law-Assoc. Dean
IIT Chicago-Kent College of Law
Met. San. Dist. of Chicago
Chicago, Ill.

Donald C. Hintze
Commander, USCG
COPT Milwaukee
2420 S. Line Mem. Dr.
Milwaukee, Wisc. 53207

John Hogan
Environment Editor
WGN-TV - Radio
2501 W. Bradley
Chicago, Ill.

Edward Jackson
3419 N. 11 Street
Milwaukee, Wisc.

Mrs. Ronald Jacobs
2491 N. Cramer
Milwaukee, Wisc. 53211

Gretchen W. James
Administrative Aide, U.S.
Senator Charles Percy
219 S. Dearborn
Chicago, Ill.

Mrs. Robert Jaskulski
Milw. League of Women Voters
12004 N. Ridge
Hales Corners, Wisc. 53130

Marirn J. Johnson
Chief of Environmental Engineering
U.S. Forest Service

Milton Johnson
Tech. Director of Labs
A.O. Smith Corp.
3533 N. 27th Street
Milwaukee, Wisc.

Eileen L. Johnston
Ill. League of Women Voters
505 Maple Avenue
Wilmette, Ill. 60091

Joseph M. Kelsenberg, P.E.
City Engineer
City of Muskego
S. 180-W. 7732 Racine Ave.
Muskego, Wisc.

James L. Kerwin
Detroit News
615 W. LaFayette
Detroit, Mich.

C. W. Klassen
Technical Secretary
Ill. San. Water Board
Springfield, Ill.

Earl Knight
Chief, Pollution Control Div.
Met. San. Dist. of Chicago
100 E. Erie Street
Chicago, Ill.

Warren Knowles
Governor of Wisconsin
Executive Office
Madison, Wisc.

Thomas Kroehn
Dist. Director, Div. of Environmental Protection
Dept. of Natural Resources
State of Wisconsin
9203 W. Bluemound Road
Milwaukee, Wisc. 53226

Paul A. Kuhn
Associate
Greeley & Hansen
14 E. Jackson Blvd.
Chicago, Ill. 60604

Quinten W. Laabs
Village Administrator
Village of Thiensville
101 Greey Bay Road
Thiensville, Wisc. 53092

James Lang
Wisconsin Ecological Society
Route 1
Oneida, Wisc. 54179

Harley F. Lawhead
U.S. Army Corps of Engineers
536 S. Clark Street
Chicago, Ill. 60605

Ray D. Leary
Chief Engr. & Gen'l. Mgr.
Milwaukee Metro. Sewer Commission
P. O. Box 2079
Milwaukee, Wisc. 53201

Kenneth Lehner
Supt. of Chemical Services
Wisconsin Electric Power Co.
231 W. Michigan Street
Milwaukee, Wisc. 53201

Benn J. Leland
Sanitary Engineer
Ill. Sanitary Water Board
1919 W. Taylor
Chicago, Ill. 60612

Saul Levine
Asst. Director
Div. of Recreation AEC
Washington, D.C.

Curt F. Lindholm
Asst. State Conservationist
SCS-USDA
4601 Hammersley Rd.
Madison, Wisc.

Leonard E. Liak
Div. Center for Environ. Studies
Argonne National Laboratory
9700 S. Cass Avenue
Argonne, Ill. 60439

Gerald D. Lorge
State Senator
State Senate
Route 1
Bear Creek, Wisc. 54922

Jon Paul Longtin
San. Engineer
National Field Investigations
Center, FWPCA
5555 Ridge Avenue
Cincinnati, Ohio 45213

Arthur W. Main, Jr.
Attorney
111 W. Washington Street
Chicago, Ill. 60602

Brain Marks
2738 Lincoln Lane
Wilmette, I.. 60091

Gerald Marks
Consulting Engineer
53 W. Jackson Blvd.
Chicago, Ill. 60604

John Martinek
Supt., Sewerage Systems
City of So. Milwaukee
2005-10th Avenue
South Milwaukee, Wisc. 53110

Jerome Maslowski
Asst. Atty. General
Lansing, Michigan

Francis T. Mayo
Regional Director
Great Lakes Region
USDI, FWPCA
33 E. Congress Pkwy.
Chicago, Ill. 60605

G. L. McCormick
President, Wisc. Resource
Conservation Council
537-W. 26861 Holiday Hill
Waukesha, Wisc. 53186

Chester A. Monson
General Production Mgr.
Charmin Paper Products
Green Bay, Wisc.

Leonard A. Montie
Asst. Engr.- Mgr.
Green Bay Met. Sewer Dist.
P. O. Box 1015
Green Bay, Wisc.

Dr. Clifford H. Mortimer
Director, Center for Great
Lakes Studies
University of Wisconsin
Milwaukee, Wisc. 53201

Harry V. Myers, Jr.
Sr. Engr., Engr. Res. Dept.
Detroit Edison
2000 Second (WSC H-16)
Detroit, Mich. 48226

Richard Nora
RAP (Revolution Against Pollution)
P. O. Box 10
Wilmette, Ill.

Milvin J. Noth, P.E.
Director of Public Works
P. O Box 100
Menomonee Falls, Wisc. 53051

David Oliver
Captain, U.S. Coast Guard
Captain of the Port, Chicago
U.S. Coast Guard
610 S. Canal Str. (Rm. 1100)
Chicago, Ill. 60607

Ray Pais
315 Aspen Lane
Highland Park, Ill. 60035

Kathleen Paschke
708 Chicago Avenue
Waukesha, Wisc.

C. Pemberton, Jr.
Director, Tech. Progs.
Great Lakes Region
USDI, FWPCA
33 E. Congress Pkwy.
Chicago, Ill. 60605

James F. Penfold
Water quality Standards Specialist
Great Lakes Region
USDI, FWPCA
33 E. Congress Pkwy.
Chicago, Ill. 60605

Kathleen E. Penfold
225 A. Washington Blvd.
Oak Park, Ill.

Bill Piotrowski
Boy Scout Troop 130
1509 Sunny Circle
Waukesha, Wisc. 53186

Stephen Poloncsik
Associate Engineer
IIT Research Institute
10 W. 35th Street
Chicago, Ill. 60137

H. W. Poston
Commissioner
Dept. of Environmental Control
City of Chicago
320 N. Clark
Chicago, Ill.

Thomas J. Powers, III
Director, Water Quality Standards
Branch
Ohio Basin Region, FWPCA
USDI
550 Main Street
Cincinnati, Ohio 45202

Ralph W. Purdy
Executive Secretary
Michigan Water Resources Comm.
Lansing, Mich.

Philip A. Reed
Tech. Asst. to Engr. of
Water Purification
Chicago Bureau of Water
1000 E. Ohio Street
Chicago, Ill. 60611

Kenneth A. Rickerson
Regional Landscape Architect
Fed. Bureau of Public Roads
18209 Dixie Highway

C. F. Riefstahl
Kiwanis Club of Skokie Valley
8132 Kolmar Avenue
Skokie, Ill.

Herbert E. Ripley
Director, Environmental
Health Services
Waukesha County Dept. of
Health
Courthouse
Waukesha, Wisc. 53186

Clifford Risley, Jr.
Director, R&D
Great Lakes Region
USDI, FWPCA
33 E. Congress Pkwy.
Chicago, Ill. 60605

David C. N. Robb
Comprehensive Basin Planner
Great Lakes Basin Commission
220 E. Huron Street
Ann Arbor, Mich. 48108

Kenneth R. Roberts
Asst. Water Resources Studies
Coordinator
U.S. Bureau of Commercial
Fisheries
5 Research Drive
Ann Arbor, Mich.

Bruce B. Robertson
Technical Supt.
American Can Company
P. O. Box 790
Green Bay, Wisc.

A. Rosenwald
Glencoe, Ill. League of Women
Voters
600 Vernon Avenue
Glencoe, Ill. 60022

Phillip Rothenberg
Senior Asst. Attorney
Metro. Sanitary District
of Greater Chicago
100 E. Erie
Chicago, Ill.

Edward C. Rubin
Regional Manager
Zimpro Inc. - Sterling Drug
1301 W. 22nd Street
Oakbrook, Ill. 60521

LeRoy E. Scarce
Chief, Laboratory Services Br.
U.S. Dept. of Interior, FWPCA
Lake Michigan Basin Office
1819 W. Pershing Road
Chicago, Ill. 60609

Robert A. Schacht
Aquatic Biologist
State of Illinois
Sanitary Water Board
1919 W. Taylor
Chicago, Ill. 60612

Robert E. Scheible
Chief Sanitary Engineer
Hdq. 5th U.S. Army
Ft. Sheridan, Ill. 60037

Mrs. Ronald Shlensky
Glencoe, Ill. LWV
165 Maple Hill Road
Glencoe, Ill. 60022

Fran Schnanig
Glencoe League of Women Voters
379 Jackson Avenue
Glencoe, Ill. 60022

Francis H. Schraufnagel
Director, Bureau of Standards
& Surveys
Dept. of Natural Resources
Madison, Wisc.

Fred C. Schroeder
State Assembly
West Bend, Wisc. 53095

John Skorupski
Water Supt.
City South Milwaukee
2005-10th Avenue
South Milwaukee, Wisc.

Thomas L. Smallwood
Attorney
Chicago Northwestern Railroad
Company

Matt Stahl
Sanitary Engineer
9th Naval District
Great Lakes, Ill.

Harold T. Stanlick
Sanitary Engineer
U.S. Forest Service
633 W. Wisconsin Ave.
Milwaukee, Wisc. 53203

Rebecca Stetz
Student - UWM

Col. William G. Stewart
District Engineer, Chicago
U.S. Army Corps of Engineers
219 S. Dearborn Street
Chicago, Ill. 60604

Edward B. Sullivan
WGN-TV News
Chicago, Ill.

Richard Swanson
Governor's Aide
Governor's Office
411 Chestnut Street
Lodi, Wisc. 53555

Thomas W. Thompson
Assistant Professor-Aquatic Biol.
Coll. Env. Sci.
University of Wisconsin
Green Bay, Wisc. 54305

John V. Tokar
Engineer
Argonne National Laboratory
9700 S. Cass Avenue
Argonne, Ill. 60439

Francis A. Underwood
Water Production Supervisor
Milwaukee Water Works
3000 N. Lincoln Memorial Drive
Milwaukee, Wisc.

K. VanSteenburg
Omaha, Nebr.

James C. Vaughn
Engineer of Water Purification
Dept. of Water & Sewers
City of Chicago
1000 E. Ohio Street
Chicago, Ill. 60611

Frank I. Viler
Superintendent
Water Pollution Control
110-51st Place
Kenosha, Wisc. 53140

DeYarman Wallace
Director, Environmental Control
Youngstown Sheet & Tube
P. O. Box 900
Youngstown, Ohio 44501

Robert W. Warren
Attorney General
114 East - Capitol
Madison, Wisc.

Alexander P. White
Asministrative Assistant
U.S. Senator Ralph Tyler Smith
219 S. Dearborn, Rm. 1758
Chicago, Ill.

James T. White, Jr.
Colonel, U.S. Army
U.S. Army Engineer District
Detroit
150 Michigan Avenue
Detroit, Mich.

Oliver D. Williams
Assistant to the Secretary
Dept. of Natural Resources
P. O. Box 450
Madison, Wisc.

John F. Wilson
Director
Wisconsin Ecological Society
P. O. Box 514
Green Bay, Wisc.

Richard M. Winar
Environmental Geologist
Commonwealth Edison
P. O. Box 767
Chicago, Ill.

Thoedore F. Wisniewski
Asst. to the Administrator
Div. of Environmental Protection
Wisc. Dept. of Natural Resources
P. O. Box 450
Madison, Wisc. 53702

Jessee A. Wood
Chief Chemist
Cities Service Oil Company
4900 Cline Avenue
East Chicago, Ind. 46312

Marion Young
Great Lakes Region
USDI, FWPCA
33 E. Congress Parkway
Chicago, Ill. 60605

Howard Zar
U.S. Dept. of Interior, FWPCA
Lake Michigan Basin Office
1819 W. Pershing Road
Chicago, Ill. 60609

John H. Zass
Past State Director
National Campers & Hikers Assoc.
120-4th Street
Waukesha, Wisc. 53186

John Zass, II
Boy Scouts Troop 130
170-4th Street
Waukesha, Wisc. 53186

PROCEEDINGS

INTRODUCTION

BY

MR. MURRAY STEIN

MR. STEIN: The conference is open.

Someone once had the privilege of introducing the President of the United States and he asked about a form of an introduction. They told him there were two forms for introducing the President, a long form and a short form. He asked what the short form was and they said, "The President of the United States." Then he asked what the long form was and they said, "Ladies and gentlemen, the President of the United States." (Laughter.)

With that, I will introduce Governor Warren Knowles of Wisconsin. (Applause.)

HONORABLE WARREN KNOWLES
GOVERNOR OF WISCONSIN
MADISON, WISCONSIN

GOVERNOR KNOWLES: Thank you very much, Mr. Stein.

Governor Ogilvie, members of the State of Indiana and Michigan, representatives of the press, distinguished guests, ladies and gentlemen.

I am delighted to have the opportunity to welcome you here this morning for this session of the Lake Michigan pollution conference. I think all of us are aware of the past history of these conferences and certainly that it is appropriate that we assemble here on the shores of Lake Michigan to reassess where we stand today.

In the light of the broad public interest now evident in ecology and the environment, the reconvening of this conference is logical and timely. A review of the previous sessions convinced me that collectively the Lake Michigan States and the Federal Government have set a course which will preserve the great freshwater lakes.

Governor W. Knowles

The public deserves assurance of our determination and has the right to expect periodic audits of the progress which is being achieved. I am not going to recite this morning the advances that we in Wisconsin have made towards the goal of stopping contamination in Lake Michigan, but I may say to all of you that we are making headway, we are proud of what we have done, and certainly we are committed to cleaning up our own house in the progress of cleaning up Lake Michigan.

I think the simple fact is, however, that we have not been able to move far enough or fast enough as I think we should and many people think we should in the matter of pollution abatement in our State. A recitation of the past inadequacies or delays is no more profitable to our cause than a litany of our accomplishments. The crucial question is, what are we going to do now, tomorrow and the years immediately ahead?

I can assure all of you that Wisconsin is going to build some real pressure for action on the problems of pollution. Our Attorney General, Bob Warren, who is here this morning, has determined to use every legal tool available to enforce Wisconsin stringent laws relating to air and water pollution. At the same time, our Department of Natural Resources has been authorized to add 40 new technicians to its staff. This together with our ORAP 200 program is going to give us the funds to proceed promptly and effectively in the area of antipollution treatment.

I think these new staff members, for instance, will vastly improve the State's ability to identify the pollution sources, to develop abatement orders and then monitor the results. I am convinced that with effective cooperation between these two State agencies, the Wisconsin Department of Justice and the Department of Natural Resources, following an aggressive policy of pollution abatement, coupled with the long-awaited Federal funding, we will meet the deadlines imposed by the Lake Michigan conference and we will restore the quality to all Wisconsin interior lakes and rivers and streams.

One additional factor that I think is very evident at the present time and should be mentioned is the fact that our chances for success have improved in our fight against pollution because of the new public awareness of the problems affecting the ecological balance of our planet. A few years ago when we first came to grips with the pollution problems within our own States and in the Great Lakes, I am sure none of us expected the broad public support which now exists for environmental protection programs. The support is there and the understanding of the complexities of the ecological problems appears to be developing. Public officials and businessmen are beginning to recognize that today and from now on they will be operating in a new climate of public opinion. The public expects governmental units to take steps necessary to stop pollution and to restore the wholesome environment. It expects industries to recognize that the marvelous manufacturing processes that have been developed are incomplete unless they incorporate all of the vital pollution controls.

However, I think we must encourage all the public to recognize that the question each person must ultimately ask himself is this: What am I willing to do? What am I willing to do without in order to clean up the environment and restore a healthy ecology? Cleaning up the environment and restoring nature's balance can't be done by somebody else. It is the effort that will affect and should involve every citizen.

I think again that the question is clear and it is simply this: What are we willing to do by way of an all-out commitment? First what are we willing to pay by reason of taxes or increased prices of consumer products? And second, what are we willing to do as individuals preserving, restoring, conserving and renewing our natural resources?

Again an awakened public concern, a responsible attitude on the part of governmental and industrial leaders, plus the leadership of States and Federal Governments, can add up to the preservation of the unique qualities of Lake Michigan and the renewal of the quality total environment in our region.

The State of Wisconsin is going to use every legal and every scientific method and every tool that we know of to meet and surpass the commitments to this conference. We will put a stop to any pollution of Lake Michigan emanating from the State of Wisconsin and we will move forward towards that goal with full speed.

I want to say to Mr. Stein and to all of you who are here this morning, we are delighted to have you here. We think this will be a fruitful conference. And I am further most pleased that Governor Ogilvie of the State of Illinois is here this morning. We are always glad to touch base with our fellow Governors and to cooperate with our good neighbors.

I would like at this time to have the opportunity and the privilege to present to you the Governor of the great State of Illinois, Governor Richard Ogilvie. (Applause.)

HONORABLE RICHARD B. OGILVIE
GOVERNOR OF ILLINOIS
SPRINGFIELD,ILLINOIS

GOVERNOR OGILVIE: Thank you very much, Governor Knowles.

Mr. Stein, distinguished members of the enforcement conference, and ladies and gentlemen.

I appreciate the opportunity to come here today and discuss an issue which is dominating the public interest, the state of our environment and what we are doing about it. It is difficult to exaggerate the scope or the severity of the problem. What we are being asked to pay is the bill for generations of neglect and a reckless disregard for the public interest.

Many persons would have us believe that the process is irreversible, that nothing can be done. Others would have us ignore the harsh realities and talk about symptoms rather than develop tough remedies. I speak today neither as a prophet of inevitable doom nor as an evangelist of the latest and most fashionable social crusade. Rather, I am here to talk some plain common sense.

In the last few days I have announced a new plan for a major reorganization and consolidation of Illinois environmental control efforts. This program includes the creation of three distinct units of government to replace the present scattered State pollution control activities spread throughout departments, boards and commissions.

Our first unit is the Environmental Protection Agency. This single agency's primary function will be to seek strict enforcement of the regulations on air pollution, water pollution and solid waste disposal. In addition to investigating pollution violations, the agency will work with industries and municipalities to develop adequate pollution control devices and systems.

The second unit to be established will be a single Pollution Control Board to replace the present Sanitary Water Board and the Air Pollution Control Board and to assume jurisdiction of solid waste disposal as well. This new board must function independently and forcefully. Operating on a continuous basis it will hold administrative hearings, and will rule on charges of non-compliance with regulations and standards for all forms of pollution throughout our State. It will perform a role parallel to that of the Federal regulatory agencies and will function as a quasi-judicial forum.

The third unit, and one that I regard as extremely important, is an applied Research and Development Institute. Because while a great deal is known about when and where pollution exists, much, much remains to be learned about how to prevent pollution while maintaining the living standards desired by a modern industrialized society. Basic scientific research on the ecological system has been carried out in many areas, but there is an urgent need for applied problem-solving research and the focus will be on identifying the priority needs and on finding practical solutions. We must evaluate current research programs by State and Federal agencies and our universities in terms of overall environmental quality needs.

This institute will be an organization of top level professionals with a variety of disciplines, including a staff of economists, engineers, natural scientists, technicians and lawyers. The expertise of this staff will enable the institute to plan a relevant research and development program. To a substantial degree this program will be carried out by means of grants or in contracts to other governmental agencies, universities and in the private sector.

In addition I am asking the Illinois Legislature to propose a $750 million antipollution bond issue to be submitted to the voters this November. This proposal is designed to promote municipal treatment plant construction. It would make us full partners with the Federal and local governments so that each assumes approximately one-third of the costs. This proposal is designed in conformity with the President's program announced a few weeks ago.

Now let me turn to the specific question of the preservation of Lake Michigan. Only in recent years has Lake Michigan needed man's care, but now it does. And this conference represents the best opportunity for implementing that care. By sharing ideas and examining the problem together, surely we can move towards a solution. Mr. Clarence Klassen, our Illinois conferee, will be presenting our ideas in great detail later. I would like to quickly review some of the things that are happening in our State.

Our Attorney General, in cooperation with the Sanitary Water Board and the Sanitary District of Metropolitan Chicago, is taking forceful legal action against polluters within the District. New regulations against the discharge of pollutants from watercraft are now in effect. The North Shore Sanitary District has passed a $35 million bond issue and has received additional millions from the State to pursue its effective battle for waste removal.

Governor R. Ogilvie

During 1970 our lake surveillance program will be augmented by aerial surveillance, utilizing both helicopters and fixed-wing aircraft.

And speaking of aircraft, I would like to add that we are continuing our concern about the possible deleterious effects to the lake of any type of offshore airport facility. I am determined to solve both our transportation and our pollution crises and without the one negating the other.

I would like to leave you with this thought. Environmental preservation has been called the great political issue of the '70's, but it need not be so, not if we move now to solve the problem. I ask this conference to give serious consideration to establishing the programs and to the acceleration of timetables in order to spare our citizens a decade of political rhetoric, and more importantly to preserve our great midwestern heritage of clean air and pure water.

Thank you. (Applause.)

OPENING STATEMENT

BY

MR. MURRAY STEIN

MR. STEIN: Thank you, Governor Ogilvie and Governor Knowles.

We have had a truly inspiring opening to the conference. This conference originally was called in 1967 at the request of the Governor of Illinois, so this is truly a State-Federal enterprise. We have been successful in many, many instances of dealing with pollution in getting the cooperation of both State and Federal authorities. We need them both if we are going to do the job, and more and more this pattern of cooperation is becoming evident in the country. Just in the past few months we have had conferences of this type in the South at the request of Governor Kirk of Florida and Governor Brewer of Alabama, and I think the recognition of the effectiveness of this type of activity has become apparent to all.

We also do know that the resource we are protecting here, that is the freshwater resource of the

Great Lakes, is one of the most precious we have in the country. The Federal Government has given prime consideration to the protection of the Great Lakes and particularly to the protection of Lake Michigan, because we have to recognize that of all the Great Lakes Lake Michigan is the one which is exclusively an American lake and if anything is wrong with Lake Michigan we are probably responsible for it.

Secondly, Lake Michigan is in a State where it can be saved. We believe the conferees have set up a program to save that lake. As an indication of the concern the Federal Government has had for Lake Michigan, the President has met with the four Lake Governors to discuss this problem and I don't think it is any accident that the one visit that the President has found time to have outside Washington on this problem has been a meeting with the Governors of the States surrounding Lake Michigan. Our Secretary, Secretary Walter J. Hickel, has been out and met with the Governors on the same problem. We intend to go ahead with the program to keep Lake Michigan clean.

In order to do that, we are in probably the most difficult phase of any pollution abatement procedure. We have a blueprint and a detailed plan for a cleanup agreed upon by the States and the Federal Government. This has been incorporated into the States and the Federal program. However, pollution control is a very, very time-consuming, complicated and involved procedure. What we must do is see that this program is carried forward without any slippage.

We also believe that the public has the right to know what its officials are doing and what the dischargers are doing. Therefore, the Department of the Interior has asked me to indicate to the conferees that what we would like to require is a detailed list of every discharger and discharge into the lake, large and small, with the state of compliance of these discharges to the requirements of the conference.

This will include whether engineers have been retained, whether preliminary engineering reports have been made, whether detailed plans and specifications have been made, and whether detailed plans and specifications have been submitted, the arrangement of financing, the initiation of construction, and the completion and the placing in fulltime operation of the remedial facilities.

I think we have made considerable progress. As I have pointed out several times, we are in the midst of the biggest municipal and industrial cleanup in Lake Michigan right now, particularly the work done at the southern tip of the lake. If we are going to continue that and keep the waters of Lake Michigan clean, we just must come up with this detailed reporting system and we must keep on top of this so no significant slippages will develop.

This is what we will largely be doing at this conference and subsequent ones. Again we will be happy to take up any significant problem that any of the people responsible for the discharges,citizens groups or State agencies will consider relevant and everyone will be given an opportunity to speak.

However, I should point out that the conferees represent the State and Federal Government and only these people will be permitted to comment or ask questions. Anyone wishing to speak should indicate the desire to do so with his State representative or me and they will be given a full opportunity to present their views to the conference. We intend to call upon the Federal Government first, then the States, and we will have a general discussion after completing all this to see how far we have moved forward under State and local and Federal law to clean up the pollution and what remains to be done in the remedial program for Lake Michigan.

At this point I would like to call on State Senator James C. Devitt of Wisconsin.

Senator Devitt.

JAMES C. DEVITT, STATE SENATOR
FOUR-STATE LEGISLATIVE COMMISSION
ON POLLUTION OF LAKE MICHIGAN
WISCONSIN LEGISLATURE
GREENFIELD, WISCONSIN

SENATOR DEVITT: Thank you very much, Mr. Chairman.

Governors, State officials and friends.

First of all let me congratulate this conference on the excellent work it has been doing since its inception in 1967. It is something that I believe that without we would all be in pretty bad shape, for if we don't have clean water and clean air nothing else is very important.

The conference has been successful, in fact I think successful beyond a lot of our expectations. Sometimes these things at a higher level turn out to be more eyewash than worth, but that is not the case in this particular conference.

Almost all of the 20 recommendations that have been made have been carried out by most of the four States and Wisconsin has been, I think, one of the leaders in this particular project. Our Department of Natural Resources has made great strides in carrying out the recommendations of this conference.

In the last session of our Legislature here in Wisconsin we passed a good deal of legislation which I believe is going to be very helpful to the situation and did, again, comply with the conference recommendations. I would like to review just a few of these pieces.

We passed a ban, an outright ban, on DDT. And by the way, I would like to thank the Department of the Interior, the Federal Water Pollution Control Administration, for the grant that they have given us on monitoring DDT in Lake

Michigan and especially to Mr. Carl Klein, who worked with us very closely in getting this grant.

We passed, I believe, a piece of legislation that will be a model piece for other States to follow--a pesticides review board, where all pesticides and herbicides will be reviewed, their effect on water pollution evaluated and then a license issued for that particular item.

We passed a boat toilet law, holding tanks for pleasure boats. And I would like to make a couple of recommendations, if I might, Mr. Chairman. Pleasure boating, of course, is a big part of our economy here in the State of Wisconsin, and having holding tanks in these particular boats will reduce water pollution a great deal, but we still don't have a Federal boat holding tank law for use on interstate vessels and until we get this Lake Michigan is still going to be polluted by our interstate vessels. I would make a recommendation that the Department of the Interior and this conference look very closely at establishing regulations for a Federal boat holding tank law.

Governor Knowles mentioned our ORAP 200 program which gives $144 million direct aid to local municipalities for establishing and updating municipal sewerage treatment plants. This has been well received and in good use in the State of Wisconsin. In fact, I had occasion to talk to our Department of Natural Resources shortly after the passage of this law and in talking to Mr. Beale, Assistant Secretary, I thought that the department might be dragging its feet in getting this plan implemented, but I found out that the plan was so successful and the requests for grants were coming in at such a rate that it wasn't dragging feet, it was a matter of paper work stacked up on the desk because we had failed to give them the help to actually hand out the money. They were in the process at the time that I called him of going into a program of finding out just how many men they needed, but we implemented that just recently.

I was happy to appear at our Board on Government Operations which appropriates money when we are out of session, along with Lieutenant Governor Olson, and the Board on Government Operations did transfer enough money to supply them with 40 additional people tc actually get this program under way. It is now going good.

J. C. Devitt

We have over 700 orders issued against polluters in the State of Wisconsin, dated orders, and to my knowledge all of them are up to schedule. I commend the Department of Natural Resources of the State of Wisconsin for their fine work in this particular area. I don't believe that they are dragging their feet. I believe that if we are going to offer criticism, such as I did originally, we should then be prepared to get in there and pitch to see that whatever is lacking is done.

I would urge this conference also to look into several other items. We should have a continual review of our standards on thermal pollution, and I think this is an important item for this conference to consider.

And last but not least, I would urge the Federal Government to do two things in helping the various States. We need the assistance of the Federal Government. We can't go it alone. We don't have enough money from our taxpayers to support the full water pollution abatement program.

We have a serious problem with the dumping of dredgings by the Corps of Engineers. We believe that the Federal Government will have to cooperate in this item

J. C. Devitt

in the full payment. The various States cannot afford the money due in this particular area. It doesn't help by having the Corps of Engineers again quit dredging our harbors and rivers to quit polluting, because this, in effect, is a form of blackmail. We need these harbors and rivers dredged, but we can't stand the pollution. Somebody is going to have to pay for the dumping of these dredgings, and I believe that the Federal Government is the only one that can because the various States cannot afford it.

Last but not least, let me commend the Department of the Interior and President Nixon for their accelerated plan on funding of aids to local municipalities for updated and new sewerage treatment plants. This is the prime cause of pollution, of course, and I believe that President Nixon's stand in saying that he is going to appropriate the money and going to fund it and going to stamp out pollution is something that has been needed and lacking for a long time. I am glad that this Administration has done this. I know that the Department of the Interior has wanted it for years. Let me congratulate both the President and the Department for their stand there.

Let me just say, too, that we sometimes get up and blow off a little steam on what we need and I suppose everybody comes to the Federal Government needing money. We have the same problem with our municipalities. They come to the State government needing money. But this is a serious problem, a problem that none of us can go alone. I think it is going to take a continual effort by all of the people involved, local municipalities, State government and Federal Government, to get the job done.

My commendations again to the Department and to the conference itself for the fine work that they have done in the past and the good work that I know they are going to do in the future.

Thank you. (Applause.)

MR. STEIN: Thank you.

I would like to ask that anyone speaking other than the panel members here come up to the lectern and identify themselves for the purposes of the record. If you have written copies of the statement, be sure and give one to the reporter. The panel would appreciate it, too, but the reporter, I think, is the prime target here, and be sure that she gets one.

The reporter is an independent contractor and if any of you want copies of the transcript, which will normally appear in about three or four months under Government processes of printing, you should make your own arrangements with the reporter on your own.

Before we go on, I would like to introduce the members of the panel.

The Wisconsin Department of Natural Resources will be represented by Mr. Thomas Frangos and Mr. John Beale for Lester Voigt.

The Illinois Sanitary Water Board by Mr. Clarence Klassen and Mr. Benn Leland.

The Indiana Stream Pollution Control Board by Mr. Blucher Poole and Mr. Perry Miller.

The Michigan Resources Commission, Mr. Ralph Purdy and Mr. Carlos Fetterolf.

The Federal conferee is Mr. Francis Mayo, who is the Regional Director for this region of the Federal Water Pollution Control Administration, Department of the Interior, with headquarters in Chicago.

My name is Murray Stein and I am from the

Department of the Interior in Washington, D. C., and the representative of Secretary Hickel.

I would like to call on Mr. Francis Mayo now for the Federal presentation.

Mr. Mayo.

FRANCIS MAYO, REGIONAL DIRECTOR
GREAT LAKES REGION, FWPCA
DEPARTMENT OF THE INTERIOR
CHICAGO, ILLINOIS

MR. MAYO: Mr. Chairman, Governor Knowles, ladies and gentlemen.

It is with confidence that I can assure Governor Knowles and Governor Ogilvie and the conferees that Secretary Hickel, Assistant Secretary Klein and Commissioner Dominick share with them their determination to abate pollution and to preserve the water quality of Lake Michigan. We have come here today at the request of the four State Governors and the Secretary of the Interior to review progress that is being made to this end. We need to review discharger by discharger what is being done to abate sources of pollution which do or may cause damage to the environment. This includes municipalities, industries, Federal installations, agriculture, storm runoff, or whatever other sources we may find to be affecting the lake.

We must insure that we have adequate mileposts to measure where progress is being made and where it is not being made. We must utilize all levels of enforcement, local, State and Federal, to insure that the mileposts and the final goals are being met.

We are encouraged that some of the States are moving to tighten up their interim and final schedules toward abating pollution. However, we are concerned where unilateral extensions may have been given by individual States which may serve to delay progress in this important program.

In our reporting today we will relate what the Federal Government is doing or is not doing to abate pollution. We will relate source by source the Federal installations which are discharging to the lake. We will hear directly from several Federal installations on their projects. We will have reports from the Bureau of Commercial Fisheries on its findings in Lake Michigan. The

Department of Agriculture will review its new programs aimed at solving water quality problems. There will be a presentation by the U. S. Army Corps of Engineers on its programs that relate to water quality in Lake Michigan. There will be a report of the Pesticides Committee established by the conferees. We will report on the water quality monitoring, vessel regulations and the status of contingency plans to deal with spills of oil and hazardous materials. There will be a statement by the Great Lakes Basin Commission and we will report on current research and development projects and how these may be translated to practical applications. We intend that this conference should be a positive review of what is being accomplished in the Lake Michigan Basin.

The presentation of the material by the Federal agencies will be in the following order: Bureau of Commercial Fisheries, Army Corps of Engineers, Department of Agriculture, and the Pesticides Committee report, monitoring report, research and development report, Federal installations report, and the Great Lakes Basin Commission statement.

If Mr. John Carr of the Ann Arbor Laboratory of the Bureau of Commercial Fisheries is here, we would like him to lead off with the Federal statement.

JOHN F. CARR, CHIEF
ENVIRONMENTAL RESEARCH
BUREAU OF COMMERCIAL FISHERIES
ANN ARBOR, MICHIGAN

MR. CARR: I am John Carr of the Bureau of Commercial Fisheries in the Ann Arbor Lab. I will discuss two aspects of the studies we have been doing: new material or new considerations that we think are important in dealing with thermal pollution and the status of alewives.

We are nearly all aware of the proliferating number of nuclear powerplants to go into Lake Michigan. In 1974 there will be seven functioning plants. The available evidence that we have on the effects of these plants is being looked at carefully by enforcement agencies and there seems to be a preponderance of evidence developed today to indicate that few or no significant ecological effects will occur. However, the work done to date is far from being comprehensive and it is likely that undesirable effects can occur that have not been considered.

The difficulty of recognizing what these effects may be and where they may occur is great and is going to take some action. I would like to present briefly some recent information that has come to light that should be taken into consideration when we are thinking about nuclear powerplants in the site location.

Recent unpublished information from Lake Huron by Ontario biologists has shown that white fish populations spawn on discrete and very limited rocky shoreline areas from a depth of a few inches to 25 feet. These spawning areas are sufficiently shallow and the spawning and incubation physiologies of these species are such that the heated discharge could seriously affect the spawning activities and destroy the incubating eggs. It is possible that the heated areas of influence of the seven Lake Michigan nuclear powerplants might also include similar but uncharted discrete spawning areas of Lake Michigan fish.

Some other factors, recent data from biologists from the University of Wisconsin here in Milwaukee have shown that fry of the whitefish family have concentrated in nursery grounds over certain reefs near Chambers Island in Green Bay. In all likelihood there are other unprotected or protected backwater island and bay areas of Lake Michigan which should be protected because they are an accumulation, the fry do accumulate in these areas. Heated effluents from improperly sited nuclear powerplants in such protected areas could destroy these important nursery areas.

Recently published data from the Bureau of Commercial Fisheries show that a slight two-degree rise in temperature, from six to eight degrees Centigrade, decreases the incubation period of lake herring 41 days and whitefish 22 days. What this means, that any unnatural heating in the areas in which the eggs are incubating would result in earlier hatching when the environment would be unfavorable to their survival. This has been shown to be the case in Lake Constance in Germany.

Finally, we have talked about this in relation to heated effluents, the fact that warm water does not hold as much oxygen, but there are also other considerations which are related to thermal stratification in lakes in which we are sealing off the bottom waters from being reaerated also. So that with warm temperatures the ability of natural waters to hold dissolved oxygen is affected. We also have an increase in the metabolic activity of organisms requiring more oxygen, an increased rate of BOD or oxygen depletion, and a reduction in the waste assimilative capacity of water.

The first three statements referred to have a strong potential effect on discrete fish spawning sites. And by discrete spawning sites and by discrete populations I mean a population that does not intermingle with others. Fishery scientists have recognized that many species use geographically exact, and sometimes quite small, spawning sites. An example of this is the whitefish spawning on South Manitoulin Island, but in Lake Michigan there is insufficient information exists on the proposed new Lake Michigan powerplant sites to document the existence of or the lack of discrete spawning areas. This information is sadly wanting and should be available before powerplants are located and discharge characteristics are determined. Investigations should be launched to determine if any such spawning areas exist within the thermal zones of the proposed plants and future Lake Michigan nuclear power sites should be carefully investigated to determine the existence of significant and affectable spawning or nursery areas.

I think it is a common misconception that thermal pollution alone will not cause irreversible conditions and that simple discontinuance of the heated effluent will permit reestablishment of a once existing organism. Some of the information we have presented indicates that the quality of the discrete spawning areas can be destroyed by thermal effluents and it does not follow that once destroyed a native fish population would once again develop in such an area. Unless these principal spawning sites are located soon, misplaced thermal effluents might destroy them forever and the species that is associated with it. With respect to the future course of action, we then recommend that important spawning and nursery areas of Lake Michigan be identified so that they may be protected from thermal effluents.

I would like to make a brief statement on the status of the alewife in Lake Michigan.

J. F. Carr

We have conducted an annual assessment of the alewife in Lake Michigan since they have been a problem. The annual dieoff is characteristic of the Lake Michigan fish, but since the 1967 dieoff those of 1968 and 1969 were quite light. The information collected during the fall of 1969 revealed that the abundance of alewives in Lake Michigan is beginning to increase, that from experimental fishing in key spots in southern Lake Michigan we had a 60 percent increase in alewives in 1969 over 1968. The fall assessment, fall of 1969, also indicated that the hatch of young alewives in 1969 was very successful and that the survival of a large hatch of young fish in 1968 has also been very high. Thus we have had two large numbers of young alewives produced in two consecutive years.

Looking at the age composition of the adult alewife shows that they are now dominated by overage fish. Over 50 percent of adult fish are in their fifth year of life. Alewives are a short-lived fish in the Great Lakes and only about 30 percent survive to age four and only five percent beyond age five.

Under normal conditions a severe dieoff during

1970 would not be expected, but since older fish account for a substantial part of the adult stocks mortality among this group will be high in 1970. The Lake Michigan area also has been experiencing wintertime air temperatures below normal, which probably has influenced the temperature of the water. In wintertime the alewives seek the warmest water in the lake, but even this warm water in Lake Michigan in the bottom during late winter approaches the threshold temperature which alewives suffer, so this will put them under additional stress. Since the abundance of alewives remains substantially below the level reached prior to the 1967 dieoff, a dieoff of the magnitude experienced in 1967 is most unlikely. There is, however, the possibility of localized heavy dieoffs during the spring and summer of 1970 because of the high percentage of older fish and because of possible increase of stress due to the colder winter temperatures.

This concludes my statement. I would like to mention that the pesticide monitoring of the Bureau of Commercial Fisheries data has been turned over to the Pesticide Committee.

Thank you.

MR. STEIN: Thank you, Mr. Carr.

Are there any comments or questions?

MR. PURDY: I have a question.

MR. STEIN: Yes, Mr. Purdy.

MR. PURDY: Mr. Carr, do I understand you correctly that you have, say, no studies under way at the present time to identify nursery areas in the vicinity of the present proposed nuclear plants?

MR. CARR: That is true, we have no studies under way at the present time.

MR. PURDY: If this conference should decide that they would like your recommendations on the types of studies that would be necessary, could you provide this to the conference?

MR. CARR: I think we would be glad to make an attempt and we could at least identify how much more information we would need. With the several proposed plants I think we could do this, yes.

MR. PURDY: Wouldn't you think that this would be, say, rather an important piece of information at the present time?

MR. CARR: I think it would. I think some of the information I presented came to light three weeks ago here in Milwaukee at the lake committee meetings. Before this we hadn't really considered that shallow waters, shallows of one and two and three feet, were important spawning areas. We now consider them to be important spawning areas.

MR. PURDY: Thank you.

MR. STEIN: Any other comments or questions?

MR. POOLE: I would like to pursue that.

MR. STEIN: Yes, Mr. Poole.

MR. POOLE: Mr. Carr, would you be in a position on a request of a State to make a study in specific areas or if you are not in a position to do it all on your own to collaborate with the State in making a study? It seems to me with only seven plants sited at the moment that this is the way it ought to be attacked rather than going into an overall study of Lake Michigan as to where the spawning areas are. I am not saying that shouldn't be done eventually, but I would think the first thing you ought to know is how many of them are around these presently proposed sites.

MR. CARR: Well, I think we would be willing to undertake this task. I think with the cooperation of the States, the commercial fisherymen in the States and their official agency that perhaps we could do this with a minimum amount of expenditure of money and perhaps by the next meeting of the conferees, at least for the seven proposed ones.

MR. STEIN: Yes, Mr. Klassen.

MR. KLASSEN: On another little different phase of the subject, Mr. Chairman, I have heard unofficially reports on the tremendous increase in coho in Lake Michigan, and I wonder if Mr. Carr could bring us up to date on the increases, something officially, about the increase of the coho. And another point, I understand that currently there are tremendous amounts of coho in the south end of Lake Michigan where we normally consider this not only polluted but warm water.

Could you comment on this, please?

MR. CARR: Yes. The four States bordering Lake Michigan plan to plant approximately seven million fish in Lake Michigan this coming year, three trout species and two salmon species. The coho salmon are in great abundance. I don't know that they are any more abundant this year than in the last two previous years. And yes, they are in southern Lake Michigan in the spring. Where the alewife are seems to be where they are feasting. There is also a temperature preference, warmer water that occurs first in the southern basin, then by June and July they scatter out all over Lake Michigan.

But all of the States are planting this year seven million fish into Lake Michigan.

MR. STEIN: Does that answer your question, Mr. Klassen?

MR. KLASSEN: Not completely, but I will drop it there.

MR. STEIN: Do you know if there are any procedures available for an alewife cleanup if you should have this local dieoff this year?

MR. CARR: To my knowledge there are no plans available. The money that was made available in 1967 was for the one year only and as far as I know there are no, at least Federal, financing plans to clean up the alewife at this present time.

MR. STEIN: I know where that money came from, right out of my budget.

But what I am talking about is I recognize that your agency is not an operating agency, it gives advice. But I don't want to move back to Chicago, practically, the way we had to do then to take on the operation of the program. This was a demonstration.

MR. CARR: That is right.

MR. STEIN: We indicated that at least you could have preventive measures against the alewife pileup on the beaches and we would hope that some consideration would be given to at least a standby procedure or a procedure where we could begin to move into an alewife cleanup if this should develop, even on a local basis.

MR. CARR: I think some of the industries that were affected in the last one have plans and I think some of the local organizations have plans for cleaning up the heavily used beaches.

MR. STEIN: Any other comments or questions?

If not, thank you very much, Mr. Carr.

Mr. Mayo.

Oh, by the way, I think we do have a representative of Senator Percy here. If he is here, would he stand up and identify himself?

MRS.JAMES: I am Gretchen James.

MR. STEIN: Do you want to say anything?

MRS. JAMES: No. I am just here to report back.

MR. STEIN: Thank you very much.

Mr. Mayo.

MR. MAYO: Colonel Stewart of the Corps has asked for a little additional time to prepare his material.

Is Mr. Lindholm from the Department of Agriculture here?

CURT F. LINDHOLM, ASSISTANT STATE CONSERVATIONIST SOIL CONSERVATION SERVICE - U. S. DEPARTMENT OF AGRICULTURE, MADISON, WISCONSIN

MR. LINDHOLM: I am Curt Lindholm, Assistant State Conservationist, Soil Conservation Service, Madison, Wisconsin.

Mr. Cratty, our State Conservationist in Michigan, has prepared a statement which I will read at this time:

(Which said statement,with its attached exhibits, is as follows:)

STATEMENT - UNITED STATES DEPARTMENT OF AGRICULTURE

by

Arthur H. Cratty
Commissioner, Agriculture
Great Lakes Basin Commission
East Lansing, Michigan

Chairman Stein:

At the second session of the Lake Michigan Pollution Conference, a statement was presented for the Department of Agriculture. The statement outlined the programs and assistance of USDA. At the conclusion of the statement, it was suggested that a group of the conferees and representatives be set up to specifically indicate areas where USDA assistance can be put to work. To date, I have not been advised of any such group taking action on the suggestion. I want to emphasize that we do have the know-how to control sediment on all lands. Further, we stand ready to assist you and the conferees in an undertaking to pinpoint the critical sediment producing areas.

We have identified the amount of sediment contributed to Lake Michigan by sub-basin. The total amount of sediment delivered to Lake Michigan is approximately 2,000,000 tons per year. Sheet erosion accounts for 95 percent of the sediment. Streambank erosion accounts for 3 percent, and 2 percent comes from urban construction and roadside erosion. For the record, Mr. Chairman, Exhibit 1 is a summary of the estimated annual sediment delivered to Lake Michigan by sub-basin. In addition, Exhibit 2 is a map showing the location of sediment production along major streams. Let me point out the map is preliminary, subject to revision, but does pinpoint the location and relative intensity of sediment production. From this information, it is evident that an accelerated land treatment and sediment control program is urgently needed. The realization of such a program will be dependent upon a cooperative endeavor of individual landowners, local and state government, and the federal government.

In addition to the above, the Soil Conservation Service has developed an Interim Guide to Soil and Water Management Activities (Exhibit 3) which can be carried out by the Soil Conservation Service which will contribute to the abatement of agricultural related pollutants. The guide outlines the principal types of technical assistance which SCS personnel may provide for measures which reduce various kinds of pollution. In using the guide, keep in mind that except for the Great Plains Program, SCS has no specific authority to carry out a pollution abatement program; however, there are many activities that SCS carries out to reduce the movement of pollutants and thereby contribute to pollution abatement. The guide provides a brief description of a specific category of pollutants: sediment, plant nutrient and organic waste, heat, disease organism, landscape, mineral salt, air pollutants arising from pests and toxic substances.

In Michigan, the Agricultural Stabilization and Conservation Service has approved two special practices under the Agricultural Conservation Program dealing directly with pollution. The practices are: reducing pollution of water by farm wastes and controlling sedimentation. I want to make it clear that carrying out these practices is voluntary on the part of the landowners. Federal cost-sharing has been established at 80 percent of the cost of applying the practice. Mr. Chairman, a copy of each practice is presented as Exhibit 4 for the record.

The Soil Conservation Service in Michigan has developed an engineering standard for farm waste disposal systems. We are making the standard available to the SCS State Offices of Wisconsin, Illinois, and Indiana as well as to all of our Area and Work Unit offices in the state of Michigan. The standard will be made available to all state and local units of government. Again, I must point out the SCS technical assistance to soil conservation district cooperators is on a request basis from the cooperator. We in SCS do not have enforcement authority. Mr. Chairman, a copy of the engineering standard for farm wastes disposal system is labeled Exhibit 5.

In all events, we stand ready to cooperate and assist the states and other federal departments.

Mr. Chairman, I am a bit concerned that I did not receive a copy of the transcript of the second session held February 25, 1969, in Chicago, Illinois until March 13, 1970. Further, I have been advised that I was to have received a letter dated about March 13 regarding this session asking for specific information for this session. I want you and the conferees to know that I have not received such a request. It is indeed a major responsibility to represent the 20 agencies of the Department of Agriculture. I request that when specific assignments are going to be made, I would appreciate ample lead time (certainly more than two weeks) to alert the other USDA agencies and obtain the information being requested.

As I am sure you are aware, we in USDA are vitally concerned with the problems at hand and the urgent need for wise use and management of our natural resources.

Mr. Chairman, that concludes my report.

Exhibit 1

SEDIMENT DELIVERED TO LAKE MICHIGAN

Hydrologic Unit	Annual Tons Delivered From:			
	Sheet Erosion	Streambank	Urban Construction	Roadside
Menominee Complex	25,000	25,000		
Menominee River	21,000			
Peshtigo River	7,000			
Oconto & Pensaukee Complex	36,000			
Saumico Complex	7,000			
Fox River	138,000		3,000	
Green Bay Complex	217,000			
Chicago-Milwaukee Complex				
Wisconsin	199,000		20,000	
Indiana	232,000			
Illinois	-			
St. Joseph River	310,000	17,000	26,000	
Black River South Haven Complex	79,000			
Kalamazoo River	144,000			
Black River-Ottawa Complex	31,000			
Grand River	217,000			
Muskegon River	43,000	19,000		
Sable Complex	97,000			
Manistee River	25,000			
Traverse Complex	85,000			
Seoul Choix-Groscap Complex	5,000			
Manistique River	3,000			
Bay De Noc Complex	4,000			
Escanaba River	4,000			
Total Lake Michigan Basin	1,929,000 1/	61,000 2/	49,000 3/	4,000 4/

Grand Total Delivered to Lake Michigan: 2,043,000 Tons Per Year

1/ Based upon computed sheet erosion rates and delivery ratios applied by hydrologic units.

2/ Based upon recent streambank erosion study, mean average of 27 tons per square mile erosion, delivery ratios applied.

3/ Based upon special urban erosion study, delivery ratios applied.

4/ Based partly upon special roadside erosion study in Wisconsin. Erosion rate estimated at 20 tons per acre, delivery ratios applied.

EXHIBIT 2

Large map (See original) entitled

GREAT LAKES BASIN
Average Annual Sediment Yield Along
Major Tributaries
Tons Per Year

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed WSP&RB Staff Date 3-70
Drawn East Lansing, Michigan

Exhibit 3

INTERIM GUIDE TO SCS SOIL AND WATER MANAGEMENT ACTIVITIES THAT CONTRIBUTE TO THE ABATEMENT OF AGRICULTURAL RELATED POLLUTANTS

Purpose

This guide outlines the principal types of technical assistance that SCS personnel may provide for measures which reduce various kinds of pollution. In using the guide keep in mind that except for the Great Plains Conservation Program, SCS has no specific authority to carry out a pollution abatement program; however, there are many activities that SCS carries out which do reduce the movement of pollutants and thereby contribute to pollution abatement.

The guide format is as follows: The heading of each sheet provides a brief description of a specific category of pollutants; the left column lists specific kinds and sources of pollutants; the second column lists soil and water conservation measures; the third column identifies effects of the measures on pollution abatement; and the column on the right indicates the degree of technical assistance that may be provided within present program authorities and policies of the SCS. These are divided into categories; Great Plains Conservation Program, and other SCS programs which includes Conservation Operations, Watersheds, Flood Prevention and Resource Conservation and Development. Technical assistance in the Great Plains Conservation Program is limited to application assistance since Departmental policy requires that most inventory and evaluation and planning work for this program will be provided from other phases of the SCS program.

As with all of our activities, judgment must be exercised with respect to priorities for the use of Service time, size of the job, staff capabilities, availability of outside consulting service, etc. The implementation of some measures, e.g. "zoning against intrusion on adjacent land" which has an effect on landscape pollution abatement requires regulatory actions. The guide is not to be interpreted as indicating that Service personnel may become directly involved in the development of regulatory measures. They may provide basic inventory and evaluation data and information which local authorities use in developing such regulations.

The guide is a fairly complete listing of measures that contribute to pollution abatement and for which the Service may presently provide some degree of technical assistance. There are many measures other than those listed in the guide that can be used to abate pollution. Consideration can be given to providing assistance for other measures only after a determination that they will conserve or develop a soil, water, or related resource.

Technical Assistance Codes

The following codes are used to show the degree of assistance SCS may provide for soil and water conservation measures that produce pollution benefits:

N - No Assistance. Assistance cannot be provided because of a lack of legislative authority, limitations imposed by Departmental policy, or measures totally unrelated to soil and water conservation.

I - Inventory and Evaluation. SCS may provide basic inventory data, such as soil surveys, hydrologic data, vegetative information, etc., and interpretations of these data.

P - Planning. SCS may provide planning assistance to landowners, land users, and others making land use decisions. Depending upon Service capabilities and based on appropriate standards, specifications, and other criteria, planning may include the preparation of needed designs. Planning assistance may be provided only if the measure will conserve or develop a soil, water, or related resource.

A - Application. SCS may provide technical assistance for the application of measures in accordance with appropriate standards and specifications. Application assistance may be provided only if the measure will conserve or develop a soil, water, or related resource.

SEDIMENT POLLUTANTS

Sediment is a pollutant affecting land, water, and air. In water, either in transport or in deposit, it damages aquatic habitat by smothering and shading food-chain organisms, carries soluble plant nutrients and toxic materials, destroys wildlife habitat, increases water treatment costs, and abrades and clogs water transport installations. Deposited on land, it poses a cleanup cost, damages building and equipment, and may lower soil productivity. As dust in the air, it is a health and safety hazard to people, livestock, and plants, increases cleaning costs, and damages buildings and other property.

Code

N - No assistance
I - Inventory & evaluation
P - Planning
A - Application

KINDS AND SOURCES OF SEDIMENT POLLUTANTS	SOIL AND WATER CONSERVATION MEASURES	EFFECTS ON POLLUTION ABATEMENT	TYPE OF TECHNICAL ASSISTANCE GREAT PLAINS CONSERVATION PROG.	TYPE OF TECHNICAL ASSISTANCE OTHER SCS PROGRAMS
	Sediment may be controlled by preventing water erosion and soil blowing, through:			
-- Sheet and gully erosion and landslides from farmland, rangeland, forests, and other lands.	1. Proper land use	All soil and water conservation measures in this category provide tangible pollution abatement benefits by reducing sediment production and movement.	A.	I.P.A.
	2. Erosion control measures on:		A.	I.P.A.
-- Airborne soil particles. -- Erosion from construction site soil disturbances.	a. Farmland, rangeland, forests, stream channels, lake shores, mined areas, mine dumps, etc. (e.g., through land treatment such as stripcropping, windbreaks, shelterbelts, cover crops, vegetation, gully plugs, debris basins, etc.)			
-- Suburban developments -- Industrial developments -- Utility routes -- Structural works of improvement	b. Construction site disturbances such as roads, trails, highways, railroads, airports, suburban developments, industrial developments, utility routes, community facility development and other structural works of improvement, etc.		N 1/	I.P.A.
-- Roads, trails, highways, railroads, and airports. -- Stream channels, lake shores. -- Mined areas, mine dumps. -- Other erosion sources.				

1/ May consider providing application assistance on such lands if they are creating damages to adjacent agricultural lands.

PLANT NUTRIENT AND ORGANIC WASTE POLLUTANTS

Code 3

N - No assistance
I - Inventory & evaluation
P - Planning
A - Application

Plant nutrients are elements essential for plant growth. Nitrogen and phosphorus are of principal concern as pollutants since they cause over-enrichment of streams and lakes, resulting in excessive growth of algae and aquatic plants. Water quality eventually deteriorates from lack of oxygen and putrefaction. Nitrogen and phosphorus occur in solution primarily as nitrates, phosphates, and organic compounds. High nitrates in drinking water may be hazardous to humans and animals. Animal wastes and plant residues are sources of organic compounds. Excessive amounts of these organics in water cause discoloration and affect taste and odor to degrade quality for many uses.

KINDS AND SOURCES OF PLANT NUTRIENT AND ORGANIC WASTE POLLUTANTS	SOIL AND WATER CONSERVATION MEASURES	EFFECTS ON POLLUTION ABATEMENT	TYPE OF TECHNICAL ASSISTANCE GREAT PLAINS CONSERVATION PROG.	TYPE OF TECHNICAL ASSISTANCE OTHER SCS PROGRAMS
	Plant nutrients and/or organic waste pollutants may be controlled or abated by such measures as:	Reduction in pollution results from:		
-- Fertilizers and soil amendments -- Organic wastes	1. Proper fertilization practices	Less fertilizer carried into streams by surface runoff.	A.	I.P.A.
-- Livestock	2. Irrigation water management	Increased efficiency reduces surface runoff and contamination.	A.	I.P.A.
. Feedlots, corrals . Dairy farms and milkhouses . Hog farms . Poultry farms	3. Irrigation system, tailwater recovery	Maximum reuse of irrigation tailwater thereby eliminating contamination of other supplies.	A.	I.P.A.
	4. Collection, disposal, and treatment of crude organic wastes.			
-- Crop residues -- Crop and livestock processing wastes	a. Use as fertilizers and soil amendments including irrigation with enriched effluent.	Use of soil filtration for disposal of waste.	A.	I.P.A.
-- Wood products waste materials	b. Debris basins or other catchment devices.	Reduced discharge of pollutants into surface waters.	A.	I.P.A.
-- Domestic sewage, treatment plant effluents	c. Water control measures (diversions, drains)	Diversion of pollutants to points of safe storage, treatment, or infiltration.	A.	I.P.A.
	d. Livestock waste lagoon	Reduced discharge of	A.	I. 1/
-- Humates from plant litter, peat, marshland	e. Lagoons for wastes other than livestock.	pollutants into surface and ground waters and into the atmosphere.	N	I.
	f. Site suitability for sanitary landfill and for septic tank absorption field.	Reduced unsightly conditions.	N	I.
	5. Low-flow releases from impoundments	Increased oxygen supply, maintain aquatic environment.	N	I.P.A.
	6. Crop residue management	Increased infiltration, reduced discharge of nutrients. Increased soil capacity to retain nutrients.	A.	I.P.A.
	7. Proper location of treatment and disposal areas with respect to water supplies, residences, etc.	Safeguarding water supply. Improving living environment.	A.	I.P.A.

1/ In servicing ACP referrals and in GPCP, where there is legislative authority for pollution abatement, P&A may apply.

HEAT POLLUTION

Heat is a pollutant primarily of concern in water. It may damage life-forms or species in the aquatic habit, thereby reducirg most desirable productivity. It may also make water unuseable for some purposes.

Code 4

N - No assistance
I - Inventory & evaluation
P - Planning
A - Application

KINDS AND SOURCES OF HEAT POLLUTANTS	SOIL AND WATER CONSERVATION MEASURES	EFFECTS ON POLLUTION ABATEMENT	TYPE OF TECHNICAL ASSISTANCE	
			GREAT PLAINS CONSERVATION PROG.	OTHER SCS PROGRAMS
	Heat pollutants may be controlled or abated by the following soil and water conservation measures or their design features:	Reduction in pollution results from:		
-- Irrigation return flows	1. Irrigation water management:			
-- Changes in ground cover, surface texture, color, or reflection	Improved efficiency; method of application; tailwater recovery.	Reduced return of warm water to the stream or more favorable temperature maintained in the water applied.	A.	I.P.A.
-- Warming of water in impoundments	2. Changes in ground surface conditions:			
	Maintain vegetation cover, revegetate denuded areas	Reduced radiation and reflections from vegetative cover.	A.	I.P.A.
	3. Releases from impoundments	Cold water releases minimize thermal effects.	A.	I.P.A.

DISEASE ORGANISM POLLUTANTS

Code 5

N - No assistance
I - Inventory & evaluation
P - Planning
A - Application

Disease organisms are often associated with other pollutants such as domestic sewage, animal wastes, or crop residues. They may contaminate air, water, and soil. They may be directly harmful to crops, livestock, or people.

KINDS AND SOURCES OF DISEASE ORGANISM POLLUTANTS	SOIL AND WATER CONSERVATION MEASURES	EFFECTS ON POLLUTION ABATEMENT	TYPE OF TECHNICAL ASSISTANCE GREAT PLAINS CONSERVATION PROG.	TYPE OF TECHNICAL ASSISTANCE OTHER SCS PROGRAMS
	Some disease organisms may be controlled by the following soil and water conservation measures:	Reduction in pollution results from:		
-- Viruses -- Bacteria, fungi, protozoa -- Nematodes, schistosomes	1. Prevention of soil blowing	Reduced movement of infected soil particles	A.	I.P.A.
	2. Removal of host plants	Elimination of infectious agents	N	I.P.A.
	3. Agricultural water management (Drainage and irrigation)	Control of vectors capable of transmitting infectious organisms.	A.	I.P.A.
	4. Change in vegetative cover	Elimination of host plants	A.	I.P.A.
	5. Suitable sites for absorption fields	Reduced likelihood of disease organisms being present in soil surface and from being discharged into the atmosphere	N.	I.

LANDSCAPE POLLUTANTS

Landscape pollutants are those that degrade the landscape and spoil human enjoyment of outdoor scenery.

Code 6

N - No assistance
I - Inventory & evaluation
P - Planning
A - Application

KINDS AND SOURCES OF LANDSCAPE POLLUTANTS	SOIL AND WATER CONSERVATION MEASURES	EFFECTS ON POLLUTION ABATEMENT	TYPE OF TECHNICAL ASSISTANCE GREAT PLAINS CONSERVATION PROG.	TYPE OF TECHNICAL ASSISTANCE OTHER SCS PROGRAMS
-- Litter and refuse	Landscape pollutants may be controlled by the following soil and water conservation measures or their design features:	These measures contribute to the beauty of the countryside and enhance the quality of environment.		
-- Abandoned materials and structures				
-- Buildings, bridges	1. Cleanup and proper disposal of waste		N	I
-- Equipment and machinery	2. Reclamation of useful materials, reuse		N	I
	3. Vegetative screening		A	I.P.A.
-- Car bodies	4. Relocation of disposal areas		N	I
-- Intrusion of construction on scenic views	5. Zoning against intrusions on adjacent areas		N	I
-- Construction site soil disturbance (see Sediment Pollutants)	6. Conservation and resource planning to promote planting of trees, shrubs, border plantings, etc.		N	I.P.A.
-- Poor timber cutting practices	7. Improved timber waste disposal, e.g. slash disposal, screened cuttings.		N	I.P.A.
-- Gullies and other unsightly erosion	For soil and water conservation measures related to construction site soil disturbance and gully stabilization and other unsightly erosion and mine wastes and tailings, see "Sediment Pollutants."			
-- Mine wastes and tailings				

MINERAL SALT POLLUTANTS

Code 7

N - No assistance
I - Inventory & evaluation
P - Planning
A - Application

All natural waters contain some dissolved salts. These salts become objectionable when they occur in concentrations large enough to be corrosive, directly toxic to plants and animals, or interfere with plant nutrition and metabolism, thereby impairing growth. Elements such as sodium, potassium, calcium magnesium, aluminum and iron may occur in water as sulfates, hydroxides, carbonates, bicarbonates, nitrate, chlorides, and borates. They may accumulate from improper water management and evaporation on irrigated soil and depress crop production; they damage aquatic habitat; and they increase water treatment costs and make water unuseable for many purposes.

KINDS AND SOURCES OF MINERAL SALT POLLUTANTS	SOIL AND WATER CONSERVATION MEASURES	EFFECTS ON POLLUTION ABATEMENT	TYPE OF TECHNICAL ASSISTANCE GREAT PLAINS CONSERVATION PROG.	TYPE OF TECHNICAL ASSISTANCE OTHER SCS PROGRAMS
	Mineral salt pollution may be controlled or abated by the following soil and water conservation measures or techniques:	Redution in pollution results from:		
-- Leachates from saline soils (irrigation return flows)	1. Improved irrigation practices.	Reducing discharges of mineral pollutants into the stream	A.	I.P.A.
-- Garbage and refuse accumulations	2. Evaporation beds and transpiration areas.			
	a. Saline springs, mine drainage		N	I.P.A.
-- Industrial wastes	b. Industrial wastes, construction materials, road chemicals		N	I
	3. Safe infiltration disposal area away from streams.			
-- Construction materials (Concrete, metal)	a. Saline springs, mine drainage		N	I.P.A.
	b. Industrial wastes, construction materials, road chemicals		N	I
-- Road chemicals (de-icing, dust-laying)	4. Burial (landfill)			
	a. Garbage and refuse accumulations	Safe disposal of these pollutants under certain soil conditions.	N	I
-- Saline springs and wells	b. Industrial wastes		N	I
-- Mine drainage	5. Capping and plugging unused wells.	Reduced pollutants that may reach groundwater aquifers or adversely affect land and streams.	N	I.P.A.
	6. Low-flow releases	Reduced concentration of mineral salts in water reaching downstream points.	A	I.P.A.

AIR POLLUTANTS

Code 8

N - No assistance
I - Inventory & evaluation
P - Planning
A - Application

Specific air pollutants include some items that could also be classed as landscape pollutants, and some may by fall-out become land and water pollutants. They may directly affect the health of plants, livestock, and people, or cause damage to buildings and equipment.

KINDS AND SOURCE OF AIR POLLUTANTS	SOIL AND WATER CONSERVATION MEASURES	EFFECTS ON POLLUTION ABATEMENT	TYPE OF TECHNICAL ASSISTANCE GREAT PLAINS CONSERVATION PROG.	TYPE OF TECHNICAL ASSISTANCE OTHER SCS PROGRAMS
-- Smoke -- Stubble and crop residue burning, forest slash-burning, etc.	Air pollutants may be reduced to some degree by the following soil and water conservation measures or techniques:	Reduction in pollution results from:		
-- Refuse burning	1. Smoke			
-- Industrial plants, utilities, residences, commercial, etc. -- Gasoline and oil-burning engines	a. Tillage practices to utilize stubble, crop residues, use alternative disease and post control methods, lop and scatter slash, improve utilization, shred to a chip mulch.	Elimination of burning and resulting generation of smoke	A.	I.P.A.
-- Airborne soil particles (dust) (see Sediment Pollutants) -- Noxious odors	b. Elimination of nonagricultural type refuse burning by improved methods of reclaiming useful materials or stockpile as compost to make soil amendments.	Elimination of burning and resulting generation of smoke	N	I
-- Crop processing dusts (organic)	2. Allergens			
-- Allergens -- Plant pollen	Weed control and relocation of crops	Less plant pollens	A.	I.P.A.
-- Dusts from fur, feathers, manures	3. Noise			
-- Noise	Tree planting, field windbreak or border, critical area planting	Screening out noise	A.	I.P.A.
-- Farming, mining, and construction equipment				
-- -- Highway, railroad, airplane				
-- Industry				
-- Recreation area (motorboat, snowmobile, etc.)				

POLLUTANTS ARISING FROM PESTS

Code 9

Pests are not usually thought of as pollutants, but from the standpoint of human welfare and enjoyment, they may well be so classed. They may be nuisances, or vectors for disease. They reduce crop and livestock yields, and affect human health.

N - No assistance
I - Inventory & evaluation
P - Planning
A - Application

KINDS OF PESTS THAT MAY BE CLASSED AS POLLUTANTS	SOIL AND WATER CONSERVATION MEASURES	EFFECTS OF POLLUTION ABATEMENT	TYPE OF TECHNICAL ASSISTANCE	
			GREAT PLAINS CONSERVATION PROG.	OTHER SCS PROGRAMS
	Pests may to some degree be controlled by design features of soil and water conservation measures, such as:	Reduction in pollution results from:		
-- Plants	1. Retarding or impounding structures	Design features to mitigate or eliminate insect breeding areas and undesirable plant growth.	A.	I.P.A.
-- Weeds				
-- Poisonous plants	2. Drainage ditches and channels		N	I.P.A.
-- Fungi	3. Change in vegetation		A.	I.P.A.
-- Algae and other aquatic plants				
-- Insects and arachnids				
-- Rodents				
-- Some birds				

TOXIC SUBSTANCE POLLUTANTS

Code 1/ 10

a - Responsibility
b - Alert to emergencies

Toxic materials are poisons which when improperly used may pollute air, water, and soil and adversely affect the quality of the environment. They may be in gas, liquid, or solid form.

KINDS AND SOURCES OF TOXIC SUBSTANCE POLLUTANTS	TECHNIQUES INVOLVED IN THE USE OF TOXIC SUBSTANCES	EFFECTS ON POLLUTION ABATEMENT	TYPE OF TECHNICAL ASSISTANCE ALL SCS PROGRAMS	
	Toxic substances must be handled by different methods according to the nature of the substance and its possible impact on the environment. The following items point out the importance and responsibilities of SCS employees in using toxic materials.			
-- Pesticides, including herbicides, fungicides, insecticides, rodenticides, etc. -- Paints, cleaners, oil, and grease -- Radioactives -- Accidental spills of industrial materials. -- Pulp mill wastes -- Lead emissions from internal combustion engines.	1. Pesticides require:	These techniques in the detection, use, and disposal of toxic materials will prevent or reduce pollution from such sources.	a	
	a. Careful application as to amounts and area in accordance with limitations stated on the label.			
	b. Protection of application operators.		a	
	c. Neutralization, deactivation, and cleanup of spills.		a	
	d. Care in cleaning application equipment		a	
	e. Adequate safe disposal of containers.		a	
	f. Safe storage and transport to avoid accidents.		a	
	2. Paints, cleaners, oils, and greases require:			
	a. Control of drainage from treated surfaces.		a	
	b. Cleanup of spills, neutralization.		a	
	3. Radioactive substances require:			
	a. Detection or monitoring.		a	
	b. Special decontamination procedures.		b	
	c. Sealed storage to outlast duration of dangerous levels of radioactivity.		b	
	d. Safe burial where there is no hazard to groundwater.		b	
	e. Removal and disposal as above of accidentally contaminated materials.		b	
	4. Accidental spills of toxic industrial materials require the treatments noted in 3 above.		b	
			GREAT PLAINS CONSERVATION PROG.	OTHER SCS PROGRAMS
	5. Herbicides require:			
	a. Careful application as to amounts and area in accordance with limitations stated on the label.		A	I.P.A.

1/ a - SCS employees having responsibility, as appropriate, to promote caution in the handling, use, cleanup, etc. of such materials.
b - Should be alert to emergencies. In event of emergencies refer to state and county Defense Board Handbooks.

50-K
Exhibit 4

UNITED STATES DEPARTMENT OF AGRICULTURE
Michigan State ASCS Office
East Lansing, Michigan 48823

MICHIGAN
NOTICE 1-ACP 70-9

FOR: County Offices

POLLUTION ABATEMENT PRACTICES

APPROVED BY: Acting State Executive Director

1 PURPOSE

To furnish counties two pollution abatement practices which have been approved by Washington.

2 BACKGROUND

Forty-eight counties submitted similar practices for the 1970 program. These two practices will be included in a revision to the (1-MI) Handbook.

3 ACTION

Counties desiring these practices shall submit two copies to the State office by March 20, 1970. The county name shall be placed at the top of the practices. If I Practices were not originally submitted for your 1970 program, a request must be made in writing to include the practices. This request must be signed by representatives of the COC, SCS and FS.

4 NOTICE DISPOSAL

July 1, 1970.

100.6 I-1 REDUCING POLLUTION OF WATER BY FARM WASTES

A Purpose. To reduce pollution of surface streams, lakes and groundwater.

B Applicability. To barnyards, feedlots, milkrooms and other farm areas from which run-off constitutes an actual or potential pollution hazard.

C Other Provisions.

1 Cost-sharing is authorized for the construction of waste stabilization ponds, terraces and diversions ditches, sod waterways or installation of piping, or such structural measures necessary to reduce water pollution.

2 Cost-sharing may be authorized only if the installation also provides soil and water conservation benefits.

3 State laws governing practice establishment will be adhered to. Prior to construction, it is the landowner's responsibility to obtain necessary approval or referral from the water resources commission.

D Specifications. This practice must be carried out in accordance with SCS standards and specifications on file in SCS and ASCS county offices.

E Federal Cost-Share. 80 percent of the cost.

100.8 I-2 CONTROLLING SEDIMENTATION

A Purpose. To reduce sediment pollution, retard sheet and gully erosion, and encourage wildlife and aesthetic values in addition to providing soil and water conservation benefits.

B Applicability. To critical areas on farms adjacent to streams, ponds and lakes which are subject to erosion and which constitutes significant pollution hazards.

C Other Provisions.

1 Cost-sharing is authorized for the necessary grading, shaping and filling, and site preparation and planting protective vegetative cover. Cost-sharing is also authorized for mulching.

2 Cost-sharing may be authorized for riprapping, grade stabilization structures, sediment collecting basins and other needed structural measures including necessary site preparation.

3 Cost-sharing may be authorized for trees and shrubs including necessary site preparation.

4 Cost-sharing may be authorized for new materials for protective fencing.

D Specifications. This practice must be carried out in accordance with SCS standards and specifications on file in SCS and ASCS county offices.

E Federal Cost-Shares. 80 percent of the cost.

SOIL CONSERVATION SERVICE

MICHIGAN ENGINEERING STANDARD

FARM WASTE DISPOSAL SYSTEM

Definition

A system of structural works designed to retain both liquid and solid wastes in a safe manner and to provide for their subsequent disposal without significant contamination of surface or ground waters or of the environment of the community.

Scope

This standard includes, within practice limitations, any conservation practice presently covered by Michigan Standards and Specifications which are needed to minimize the erosion and/or control the runoff across or from the feedlot. Such practices may include but are not limited to terraces (600), diversions (362), grassed waterways (412), open channels (480 & 590), grade stabilization structures (410), debris basins (350), tile drainage (606), pumping installations (533), and ponds (378) (either pit or embankment type) as the site may require.

In addition, it may include such special practices as settling basins, detention basins, anaerobic and aerobic lagoons, and spray type disposal systems as described in this standard.

Purpose

A Farm Waste Disposal System is used to prevent or reduce the pollution from farm runoff to downstream surface and/or underground waters and to enhance esthetic values at downstream locations.

Conditions Where Practice Applies

General

This practice applies to any farmyard or feedlot where pollution problems would result from uncontrolled runoff.

This standard establishes the minimum acceptable criteria for the design and installation of animal waste disposal systems. It does not include waste treatment systems for domestic sewage or for manufacturing plants or processing plants for agricultural products.

Where other than animal wastes are to be disposed of (such as cherry cooling water, fruit and vegetable wash water, etc.) or where site conditions will not permit the use of the following criteria, other design criteria and waste disposal techniques may be approved by the State Conservation Engineer on a job by job basis.

State Law

All state laws and published implementing rules established by the Water Resources Commission of the Michigan Department of Natural Resources or other state agencies and any regulations or ordinances established by county or other units of local government shall be strictly adhered to. The owner or operator will be responsible for securing all necessary permits where required.

Design Criteria

Definition of Terms

As used in this standard, the following terms mean:

1. Aerobic Lagoon - a waste stabilization pond constructed to process and decompose animal wastes (including body excrements, feed losses, and other material) by use of sunlight, air, bacteria which require a relatively high level of dissolved oxygen in the waste water, single-celled aquatic life, and algae action on the liquids and solids.

2. Anaerobic Lagoon - a waste stabilization pond having the same purpose as an aerobic lagoon except that the bacteria whose action breaks down wastes does not require the presence of dissolved oxygen.

3. BOD_5 - the 5 day biochemical oxygen demand for a given waste water. It is expressed in milligrams of oxygen which will be consumed by the bacteria in one liter of the waste water during 5 days of incubation under specific laboratory conditions.

4. **Detention Basin** - a pond constructed to store polluted runoff from a waste producing area until such time as it may be disposed of in an acceptable manner. It differs from a waste stabilization pond in that no provision is made for the decomposition of the waste. That which does occur is considered incidental since its prime function is storage.

5. Domestic Sewage - the waste water from a kitchen, bathroom, lavatory, laundry, or toilet.

6. Septic - rotting, decomposition of organic matter by bacteria, fungi and oxidation resulting in the formation of foul-smelling products.

7. Settling Basin - a tank or pond or pool area(s) constructed in such a manner that the flow of waste water will be slow enough to allow a large portion of the solids in the water to settle out of suspension.

8. Liquid Spreading Areas - a designated area which is maintained in grass for a planned period of time during which waste water (polluted runoff) is spread over it using irrigation equipment or other mechanical means.

General

The design of any Farm Waste Disposal System must give recognition to all major components of the system so that each functions in a manner that is compatible with all other components. These major components are:

A. Structural works to exclude unpolluted runoff from areas outside the system.

B. Feedlot features which facilitate the operation of the feedlot and the removal of waste materials.

C. Structural works to convey waste materials from the feedlot to the disposal facilities.

D. Disposal Facilities which process and/or provide for final disposal of the waste material.

The design and installation of each component will include the following capabilities:

A. Structural Works to Exclude Unpolluted Runoff

These should include the diversion of surface runoff from areas outside the feedlot including water from gutters on buildings.

An exception to this occurs where, for a limited time, this water is allowed to enter the waste disposal system in order to provide an adequate liquid level in lagoons or other treatment facilities.

B. Feedlot Features

A feedlot should be laid out so that its operations will be compatible with the disposal facilities and maintain a desirable environment for animal performance.

While existing feedlots may not lend themselves to economical modification in all aspects, their modification should include, but not be limited to, consideration of animal density, type of surface, slope for adequate drainage, erosion control on steeply sloping lots, mobility of animals and vehicles in the lot, minimizing odors, flies, and dust, animal health and methods by which manure is removed from the feedlot.

Guidelines for feedlot planning may be obtained from Information Series sheets (mimeo) issued by the Agricultural Engineering Department, Michigan State University and bulletins from the various agricultural experiment stations, Midwest Plan Service (available at county Extension Service offices) and other agriculturally related agencies.

New feedlot design should include provision for all of the above items plus others. They should not be located immediately adjacent to streams or watercources. Space should be provided so that conveyance works, settling basins, detention ponds, lagoons, spreading areas, etc. are above lands subject to overflow. The most desirable feedlot slopes are from 4% to 6%. Relatively flat areas with poor surface drainage must be graded to provide drainage. Slopes with a south exposure are preferable and east slopes are second in preference to provide early drying of the lot. Feedlots on highly permeable soils or soils with a high water table may cause groundwater contamination. Avoid locating feedlots close to towns or other populated areas.

C. Structural Works to Convey Waste

A surface drainage system should drain water away from all feed bunks, openings to roofed shelter and manure storage areas. Lot drainage must be conveyed in open channels which can be cleaned with tractor-mounted equipment. Avoid culverts under roadways or openings under feed bunks which may clog and require hand cleaning. Where pipes must be used to convey manure, provide easy access for rodding and cleaning. If possible, provide a flap gate or plug which may be opened at frequent intervals and manure flushed through the pipe. All pipes to handle manure must be 6" or larger and be on a slope of 1% or more. Generally, long tile lines to convey waste water should not be used due to the danger of clogging.

D. Disposal Facilities

1. General Requirements

a. Soils: All disposal facilities (settling basins, detention ponds, waste stabilization ponds, and similar structural works) will be constructed in relatively impermeable soils in order to prevent the pollution of groundwater or surface water. Where such soils do not naturally occur at the site, pond sealing techniques will be used to prevent this type of pollution.

b. Protection: All detention ponds, waste stabilization ponds (lagoons), and similar impoundments will be adequately fenced and signs posted to designate the nature of the facility and to warn against trespassing. A gate with a lock shall be installed. Settling basins shall be similarly protected where deep accumulations of wastes in liquid or slurry form are expected.

c. Vegetation: Embankments and areas surrounding settling basins, detention ponds, and waste stabilization ponds (lagoons) shall be protected from erosion by vegetation or other acceptable methods.

d. Maintenance: All impoundments shall be inspected periodically. Grass, weeds, and brush shall be controlled by mowing with special attention to the edge of the pool. Clippings from mowing operations should be kept out of the pool.

2. Facility Requirements

a. Settling Basin: A settling basin or tank should be provided between the waste source and a detention basin or waste stabilization pond. This will remove any solids that will not decompose and reduce the total volume of organic solids which reach the final basin. A settling basin must have a storage volume adequate to hold the maximum expected accumulation of solids between clean-outs plus sufficient additional area to provide velocities through the basin of 1.0 feet per second or less (based on peak flows from 10 yr., 24 hr. storm). All settling basins shall have a minimum volume of 1.5 inches runoff from the contributing area. Each settling basin shall have a controlled release of impounded runoff. Any spillway used to discharge runoff from the settling basin into a detention basin or waste stabilization pond shall have the capacity to pass the peak flow from a 10 year 24 hour storm from the contributing area.

A settling basin may be constructed in one of the following ways:

(1) A concrete tank which can be emptied periodically using liquid manure handling equipment.

(2) An excavated area which can be cleaned periodically with a front-end loader or a dragline. The depth of accumulation of solids should be kept low (suggested depth 2 feet) to facilitate their drainage and subsequent handling. Greater depths of accumulation may be permitted if clean-out is done with a dragline. For this, the basin top width should be 70 feet or less.

(3) Structural barricades or low dams in a constructed low gradient channel or watercourse and located in the feedlot or between the feedlot and the final basin. Where a settling basin is located within a feedlot, that area should not be included in computing the number of animals the lot can handle.

Where perforated risers are used to remove the liquid, they should be loosely wrapped with approximately 3 turns of poultry netting or hardware cloth or be surrounded by a layer of 3/4" gravel at least 2 feet thick. Poultry netting or hardware cloth must be replaced from time to time due to corrosion.

All settling basins shall be provided with one foot of freeboard above design water surface. Embankments shall have a minimum top width of 8 feet and side slopes no steeper than 3:1.

In order to reduce erosion, the slope length of the contributing area above a settling basin should not exceed 500 feet (unless the lot is paved). Terraces or diversions should be used to limit slope lengths. This is especially important on slopes of 10% or more.

b. Detention Basins: These are designed to store the runoff from the contributing area until it can be disposed of by application to the land. In order to provide storage during winter months when the ground is frozen, the pond must be able to hold 6 inches of runoff from the contributing area. An exception to this would occur when it is possible to empty the pond within 10 - 15 days after a runoff occurence. In this event, it must have capacity for the runoff from a 10 year, 24 hour storm with RCN = 90.

Since in many instances a detention basin will function partly as an anaerobic waste stabilization pond, provisions should be made for clean out. If a dragline is to be used, the top width of the pond should not exceed 70 feet. It may be possible to pump much of the sludge out in suspension, in which case the shape of the pond is not critical.

The detention basin--as well as the settling basin--should be located adjacent to or near the contributing area, preferably downgrade so that gravity flow may be utilized. Where this is not possible, a properly designed sump and pumping equipment may be used. Pumping and associated equipment should be constructed of corrosion resistant material.

The basin shall be located as far from the farm residence as possible (300 feet minimum recommended) and farther (¼ mile or more recommended) from residences on neighboring properties. It should also be located so that summer prevailing winds will carry odors away from residences.

An elevation difference of at least 2.5 feet shall be provided between the maximum design pool level and the top of any dike or embankment around the basin. An emergency spillway at least 10 feet wide and at least 1 foot above maximum design pool level shall be provided. No mechanical spillway will be provided unless the owner has permission in writing from the Michigan Water Resources Commission to release flow into surface waters.

All criteria for the design of pits, dikes, embankments, mechanical spillways (where permitted by W. R. C.) and vegetative spillways shall be in accordance with Michigan Engineering Standard and Specification 378 Farm Pond. Preference should be given to 3:1 slopes (or flatter) for areas which must be mowed.

Inlet structures to the basin must be provided for erosion control.

Provision shall be made to keep bedding, oil, and other floating material out of the basin.

Facilities for the evacuation of the detention basin will be provided to deliver the liquids to the spreading area. The evacuation of the pond will require the use of a pump (with adequate capacity against the required pumping head), pipe line and irrigation type sprinkler head(s). Selection of this equipment should be according to manufacturers recommendations recognizing the presence of solids in the liquids and the corrosive nature of the liquids.

c. Disposal Lagoons (Waste Stabilization Ponds): A sufficient water supply shall be available to fill the pond with water to the minimum depth before waste material is admitted. If the first loading occurs during the summer, it shall be gradual. If it is during the winter, the initial loading rate is not so important as reaction will be slight before warm weather occurs. Daily loadings result in the best operations.

Provisions shall be made to keep bedding material, straw, oil, and other floating material out of the pond.

Gravity inlets to the pond should be a pipe which shall be at least 6 inches in diameter and shall discharge an appreciable distance out in the pond at an elevation above design pool level. The pipe shall have a slope of 1% or more (or a flow velocity of 3.0 fps or more) and shall have a tight stopper or flap gate at the upstream end to allow liquids to be flushed through rapidly and prevent ice build-up during the winter. All gravity flow pipes shall be installed so that they may be rodded and cleaned. Where waste water is pumped into the pond, the inlet may discharge below design pool level if the flow velocity is 3 feet per second or more.

Outlets (where permitted by W. R. C.) shall remove liquids from the pond at a point away from the edge of the pool and far enough below the surface to prevent freezing. The location of inlet and outlet pipes must be considered carefully to prevent direct flow between them.

All other features of lagoons shall be constructed in the manner described for detention basins.

(1) Aerobic Waste Stabilization Ponds

Since aerobic type ponds are relatively odor free, they are useful in more heavily populated areas. However, to function properly, they must be regulated so that the liquid depth is always between 2 and 5 feet. It is often necessary to add water for this purpose so that a sufficient water supply must be available. The bottom of the pond must be essentially level to avoid deep areas which will become anaerobic.

Aerobic ponds have a further limitation in that they require a large surface area. This area will equal or exceed that required using Table 1. The minimum volume between the maximum and minimum depth must be equal to 6 inches of runoff from the contributing area.

The use of aerating equipment to maintain aerobic conditions may be possible but is usually quite costly.

(2) Anaerobic Waste Stabilization Ponds

Anaerobic waste stabilization ponds will be septic and will give off odors. They should be located away from residences in the manner indicated for detention basins.

Water depth for anaerobic ponds shall be a minimum of 6 feet. A sufficient water supply must be available so that water may be added to maintain this depth.

The total volume between the minimum level and the maximum design pool shall be six inches of runoff from the contributing area.

The minimum surface area for anaerobic stabilization ponds will be that computed by use of Table 1.

d. Final Waste Disposal (Land Application):

(1) **Spreading Areas**

Solid waste spreading areas and liquid spreading areas should be at locations sufficiently distant from streams and watercourses to prevent contamination of runoff.

Spreading areas which may contribute to groundwater pollution must be avoided.

(2) Solid Waste Disposal

Solid waste (manure) from the feetlot may be hauled and spread in the conventional manner during appropriate seasons of the year. Spreading on frozen ground must be avoided as thawing may result in highly polluted runoff. Storage of solid wastes shall be in such a manner and location that polluted runoff water will not leave the storage site.

Application to a field with heavy vegetation or plowing or discing soon after application will reduce the possibility of polluted runoff.

(3) Liquid Waste Disposal

Liquid wastes may be applied to the land with hauling and spreading equipment or spray (sprinkler) irrigation equipment.

Disposal by hauling and spreading, because of its high labor demands, is generally limited to slurries of wastes. Also since the storage of these often produces some anaerobic action, the spreading of this material will often produce considerable offensive odor in the vicinity. For these reasons this method will usually be limited to situations where neighboring residences are not close to fields where the spreading will be done.

Disposal by spray irrigation equipment has a lower labor requirement but also has the following limitations:

(a) Application rate - since waste water must often be applied when the soil is at or above field capacity and without producing puddling or runoff, the usual irrigation water application rates generally should not be used. For this purpose, the application rate should be based on the permeability of the most restrictive portion of the soil profile unless the irrigation application rate is less. Values for soil permeability may be those shown in the Michigan Engineering Interpretation sheets for soils. Preference should be given to the lower values of these estimates unless site investigations demonstrate that the soil has a higher permeability.

While sandy soils may permit a higher application rate, their ability to remove objectionable nutrients from waste water is appreciably less than that of heavier soils. Thus, care should be taken to avoid adding polluted water to the groundwater on a sandy site.

(b) Requirements of disposal area - waste water may be used for irrigation purposes with proper dilution to avoid "burning" of crop foliage. Often, however, this type of disposal will require a designated area to which water may be applied irrespective of crop needs. Such an area will generally be one to two times the size of the contributing (feedlot) area. It should be kept in permanent grass with the recognition that its use as pasture or hay is unreliable. From time to time this area should be relocated so that the nutrients accumulated in the soil can be removed by cropping.

(c) Requirements of spray irrigation equipment - while diluted waste water will go through standard irrigation equipment, that which contains appreciable solids requires equipment with special characteristics. Among these are pumps and sprinkler heads which will handle solids. This may involve the removal of screens, fins, etc. which the solids may clog. Also all equipment must be sufficiently resistant to the corrosive action of the waste water to insure an economical length of life.

Waste water with less than 8% solids can usually be handled in the same manner as clean water. For higher solid contents, special provisions for higher friction losses must be made.

It is highly desirable to flush the irrigation equipment and to wash polluted water off vegetation with clean water after each application.

MICHIGAN ENGINEERING SPECIFICATIONS

Applicable Michigan Engineering Practice Specifications will apply to components of the waste disposal system.

All construction materials exposed to farm effluents shall be corrosion resistant.

Table 1

ALLOWABLE LOADING RATES THAT WILL ASSURE STABILIZATION OF WASTES

Waste From	Population Equivalent	Pounds BOD_5/Day	Minimum Surface Area Per Animal	
			Aerobic	Anaerobic 1/
			(Acres)	(Acres)
Man	1	0.17 2/	0.010	not recommended
Animal				
Horse	11.4	1.94	0.125	0.0026
Cow	16.4	2.79	0.167	0.0037
Sheep	2.45	0.42	0.025	0.0006
Hog	1.9	0.32	0.020	0.0004
Chicken			0.00143	3/

1/ Based on a permissable loading of 1,000 pounds of BOD_5 per surface acre.

2/ Generally accepted value for human sewage. Some references use a value of 0.20 pounds BOD_5 per day.

3/ This value has been omitted because of extremely objectionable odors observed in field installations approaching loadings that would be considered practical.

MR. STEIN: Any comments or questions on Mr. Lindholm's statement?

Mr. Mayo.

MR. MAYO: I understand, Mr. Lindholm, that the ASCS program beginning in fiscal 1970 provides for some enlarged consideration of water pollution control activities. Could you give us just some general idea of how significantly enlarged this activity is going to be?

MR. LINDHOLM: This pertains to farm wastes, of course, which I have noted here in this report. This is more or less of a pilot project at the present time, at least in the State of Wisconsin. There are selected areas in which there will be consideration for the reduction control of farm wastes pollution and these will take the form, particularly around the barnyards, the farm lots, feedlots, in which practices will be installed to control this erosion, control the pollutants. In some cases, of course, water will be diverted from the lots and feed yards; in other cases, I am sure, there will be lagoons, there will be a settling basin, collection basin for some of these wastes on particular farms, and that is the type of activity that is concerned here with the ASCS and technical assistance of the Soil Conservation Service.

Now, the engineering standards have been developed in Michigan and it is expected that the engineering standards in Wisconsin will be developed very shortly, within the next two to three weeks, and of course this is a cooperative program in Wisconsin with the University of Wisconsin.

MR. MAYO: It is my understanding that each State ASCS committee has developed a handbook of practices in which it will share the cost under the ASCS program, and that these handbooks are reviewed annually for the purpose of amending or updating or adding practices.

I am wondering if any deliberate effort has been made so far by the States in the Lake Michigan Basin to get an input to the definition of these practices from the State water pollution control agencies.

MR. LINDHOLM: I am sorry, I am not able to answer that question. As far as the State of Wisconsin is concerned, no, I don't think that we have. Unless somebody else has an answer here, I--

MR. FRANGOS: Mr. Chairman, yes.

MR. STEIN: Mr. Frangos.

MR. FRANGOS: We have been meeting with the agricultural people and have a representative of our agency on their committee in developing the criteria for these practices, so we are moving into this area as a new one.

MR. MAYO: Have any of the other conferees had an opportunity to have an impact on the definition of these practices?

MR. PURDY: Mr. Chairman.

MR. STEIN: Yes.

MR. PURDY: Michigan has a member of their staff that meets with the Soil Conservation Commission at each of their meetings, we have a representative at all of their commission meetings.

MR. MAYO: I raise the point because I think we have here, through the ASCS program, an excellent opportunity for the States and other Federal agencies 1) to have an impact on, defining those on-the-farm practices that can be worked with to bring about water quality improvement, 2) provide to the ASCS program a rather substantial background of expertise, and 3) also to have the opportunity to coordinate beyond existing water pollution abatement programs in the individual States with the day-to-day on-the-farm practices in which the Department of Agriculture plays such a major role.

I would certainly recommend to the conferees that we make a deliberate effort to collectively review the ASCS handbooks for the four States, that have been developed for fiscal 1970. Also to collectively examine the opportunities for making some specific recommendations on the kinds of on-the-farm practices, which the Department of Agriculture might reasonably share in the cost, this would help us bring about some inroads into the yet-not-adequately explored program of controlling water pollution from agricultural practices.

MR. LINDHOLM: I am sure we would be very happy to cooperate with each and every agency that may be involved and would like to get involved in pollution control with the on-land practices of the individual farms as well as other areas.

MR. STEIN: Mr. Lindholm, I don't want to stop anything in the bud, because I think your statement has been one of the best I have heard from an agricultural source. But I notice "cooperation" sounds good. It is not for lack of want of these conferees trying to get at the agricultural problem, we just have not been able to get any response where we could get a project we could deal with from agricultural wastes or an evaluation of the wastes where we could cut them down.

You say you don't have enforcement authority. The States represented here and we do. And the point is, if you can say that your soil conservation projects can reduce wastes and we can put a time schedule on these to determine in relation to the costs what they are going to reduce, this is precisely what we have been looking for. We have tried over and over again to find out how much or the quantity of phosphates or nitrates put on the ground in the Lake Michigan Basin. We haven't been able to get anything that we can put our fingers on to know what we are controlling or what we can possibly do.

I would hope that the conferees would cooperate with you. But if we are going to make this meaningful, we must come up with more than glittering generalities. We must come forward with a program that has specific projects and discover where we are going to reduce pollution from agricultural sources. So far I don't think this is much of an opening sequence. This has been our weakest area of control.

MR. LINDHOLM: Well, I am sure we recognize this too, Mr. Chairman, and I am sure there are many possibilities of getting together and coming up with some recommendations as far as things to do in order to reduce this pollution.

MR. STEIN: Governor.

GOVERNOR KNOWLES: Mr. Stein, we have had a presentation and a study before our Natural Resources Council of State agencies which was presented by Professor Beatty of the University of Wisconsin. He did make some specific recommendations. He certainly dealt with the entire problem and the magnitude insofar as it affects our particular State.

If the conferees are interested, I think we could have him come over tomorrow and make his slide presentation. It is about 20 minutes; it is very interesting, and he does come up with some specific recommendations.

MR. STEIN: I think we would be delighted to have it, Governor, if we might, because that is what we are really groping for and looking for.

Thank you, Mr. Lindholm.

MR. LINDHOLM: Thank you.

MR. STEIN: May we take a 10-minute recess.

(RECESS)

MR. STEIN: Let's reconvene.

We stand reconvened. I guess it is like being back in Washington. I did introduce a representative of Senator Percy, but I didn't have full information at the time.

At this time I would like to take the opportunity of introducing Mr. Al White of Senator Smith's office. Mr. White, thank you very much. At least we proceeded in the order of seniority, I guess. (Laughter.)

(Off the record.)

MR. STEIN: May we go back on the record.

Mr. Mayo.

MR. MAYO: The next Federal agency presentation will be given by Colonel Stewart, the Chicago District Engineer of the U. S. Army Corps of Engineers.

COLONEL WILLIAM G. STEWART
CHICAGO DISTRICT ENGINEER
U. S. ARMY CORPS OF ENGINEERS
CHICAGO, ILLINOIS

COLONEL STEWART: Chairman Stein, Governor Knowles, Governor Ogilvie, ladies and gentlemen.

It is a pleasure to be here in response to your invitation to report to you on what the Army Corps of Engineers has done during the past year to develop methods of disposal of dredgings containing pollutants. As you will recall, Recommendation No. 11 of the report of the first enforcement conference convened in 1968 states:

> "The prohibition of the dumping of polluted material into Lake Michigan is to be accomplished as soon as possible. The Corps of Engineers and the States are requested to report to the conferees within six months concerning their program, at which time the conferees will consider adopting a coordinated approach toward the disposal of dredged material together with a target date for

getting the program into operation."

I believe that those of you who were here at the second enforcement conference last year will recall that General Robert M. Tarbox told of our program for research and experimentation and also of our plans for disposal of dredgings from Lake Michigan harbors during 1969. This morning I will briefly discuss our research program and report on the progress we have made during the past year.

In 1966, we requested funds to build diked enclosures at the 15 most polluted harbors on the Great Lakes of such capacity so as to hold deposits for the ensuing ~~ten~~ years. The Lake Michigan harbors in this group are designated on this slide, which I find rather difficult to see from here, by red marks, Green Bay, Milwaukee, Grand Haven, and the harbors around Chicago.

However, at that time there was no evidence to show the dollar benefits which would result to justify the high costs involved. Before asking the taxpayers to shoulder such a financial burden for this program, the Bureau of the Budget asked the Corps, in cooperation with the Federal Water Pollution Control Administration and other agencies, to conduct an investigation into the whole dredgings disposal problem on the lakes. This study, which is called the Pilot Program for Determining Alternate Methods of Disposal of Polluted Dredgings--it is bound to have a shorter title some way or other--has taken about two years and has cost over $8 million to date.

The Great Lakes Regional Office of the Federal Water Pollution Control Administration worked with us on the study.

An independent Board of Consultants, each very well known in his discipline, was engaged to help develop a plan of study, to apply and study new approaches to the problems involved, and to evaluate the results. They took many field inspection trips, conferred frequently with those directing the study, and significantly influenced the direction and scope of the investigations.

The program included extensive sampling studies, conducted principally by FWPCA, but with some substantial help by the Engineer Districts. Dredged materials were sampled, as were the waters in the harbors where dredging takes place. in the open-lake areas where it is deposited, and in disposal areas of various kinds on shore, along shore and off shore. Samples were analyzed for physical characteristics, chemical content, toxic or other effects on plants, animal life and water quality, and as to appearance and odor. In addition, under contract with the University of Wisconsin, functional studies were made to determine the effect of dredgings on the ecology of the lake disposal areas.

Our Engineer Districts located possible sites near harbors with polluted sediments where diked enclosures might be built to receive dredgings; studied the possible use of such filled areas, along with the cost of their development; developed techniques for transferring the dredgings into enclosures constructed for this purpose in Cleveland and Buffalo harbors; and devised and used methods of placing the material in lake disposal areas so as to reduce adverse effects on the lake water quality.

The Pilot Program report has been completed and has been reviewed by the Bureau of the Budget. The Secretary of the Army, in forwarding the report, recommended legislation which would "provide for construction of contained dredge spoil disposal facilities for the Great Lakes and connecting channels, and for other purposes."

A Washington level policy statement, giving the Administration proposals for solving the spoil disposal problem, is anticipated within the next few weeks. Until that statement is made, we are doing everything we can within the limits of our current authority and resources to minimize the adverse effects of our dredging operations. In this respect I will show you figures comparing actual dredging experience in calendar year 1969 with our program for 1970.

The information on these following slides will be available in the handout later.

This slide summarizes the actual dredgings done in 1969. The first column shows the cubic yards of unpolluted material placed in the open lake. The next two columns concern polluted dredgings and show the amounts placed in confined disposal areas in the middle column and in the open lake on the right. You will note that of the total 2-1/2 million cubic yards dredged, most was defined as unpolluted, 71 percent. Of the polluted material something over about 60 percent went to the lake.

Col. W. G. Stewart

This next slide shows the corresponding figures programmed for this year. This is the program laid out in order to accomplish the dredging which must be accomplished in order to maintain the project depths in the various harbors around the lake. About the same amount of unpolluted dredging is planned for open lake disposal as we had last year. This year there is much more material classified as polluted. This is caused partly by the postponement of some dredging last year and partly by a reevaluation of the material by FWPCA. We also have a very significant new work dredging program which involves some of this in Green Bay.

However, most of the polluted material is planned for confined disposal areas, over half of it.

This next slide summarizes the percentages for polluted dredgings only and it shows that in 1969 we put 41 percent in confined areas and 59 percent in the open lake, whereas our program this year involves 87.9 percent in confined areas and 12.1 in the lake. The total volume, of course, is much greater. It has gone from 700,000 cubic yards to 2-1/2 million. Nevertheless, even though it has a threefold increase in the amount of polluted material, the cubic yards planned for the lake is actually about three-quarters of that for last year.

Well, in spite of that improvement there still exist many areas where polluted bottom materials must be dredged if the harbor is to be kept operating and where dike disposal areas are not at this time available. Between now and the time such areas are available we are faced with the choice in those locations of disposing of polluted dredged spoil in the lakes or of not dredging at all. It is our intention to formally notify the Governor of each State bordering on the Great Lakes of the scheduled dredging which will be required this year to maintain the federally-authorized channels and harbors in his State. We will indicate that such dredging will be carried out unless the State informs us that the public interest is better served by foregoing the dredging.

Towards this end we will now outline the dredging which should be done in Lake Michigan during this calendar year to maintain suitable depths in federally-authorized navigation projects.

This slide shows the program for Wisconsin harbors in 1970. Most of the dredging shown in Green Bay is new work involved in deepening the entrance channel. In Manitowoc the harbor is not polluted but the river is, where we show some of each. Similarly, in Sturgeon Bay the outer harbor is not polluted but the inner channel is so classified. You will note that in several harbors the dredgings are classified as polluted but no confined disposal areas are now available.

This slide shows the same thing for Michigan harbors on Lake Michigan. Where both polluted and unpolluted amounts appear the outer parts of the harbor are generally not polluted while the river, turning basins, and sometimes the inner harbor are. Most of the material in the Lake Michigan harbors in Michigan which are scheduled for dredging this year, as you can see, are not polluted.

There is similar information for Illinois and Indiana. Here the only open lake dumping of polluted material which would be in the program would be for Waukegan.

This slide also shows the totals for all Lake Michigan States. These figures all appeared on the earlier slides that we had as well.

The next slides show by harbor the actual quantities of polluted dredging performed during 1969 and the method of disposal, whether confined or open lake,and for comparison the estimated quantities of similar dredging and disposal methods programmed in 1970.

This shows those Wisconsin harbors which have polluted material. The left two columns compare the amounts of polluted materials placed in confined disposal areas in the two years, that is were in 1969 and the amount planned in 1970. The last two columns compare the open disposal for the two years.

Similar information is shown here for Illinois and Indiana.

Finally we have the same data for Michigan.

At the bottom are the grand totals for all four States on Lake Michigan.

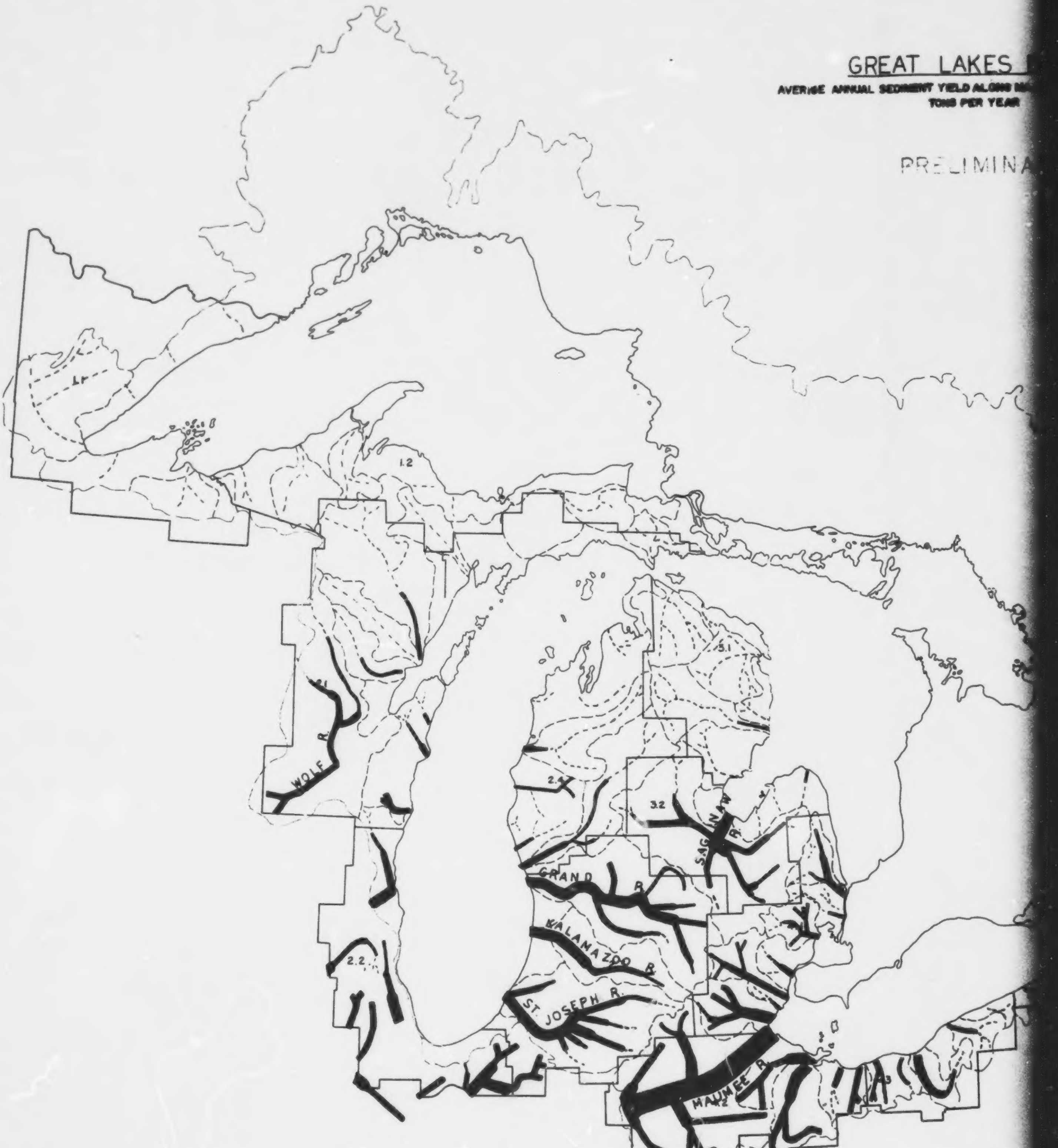
The following slides show controlling water depths at low water for all project harbors on Lake Michigan. This slide shows the Michigan harbors. The first column shows the project depths. These depths are to be maintained by maintenance dredging. The second column shows the estimated controlling depths below low water for calendar year 1970 if no dredging is performed

GREAT LAKES

AVERAGE ANNUAL SEDIMENT YIELD ALONG

TONS PER YEAR

PRELIMINA

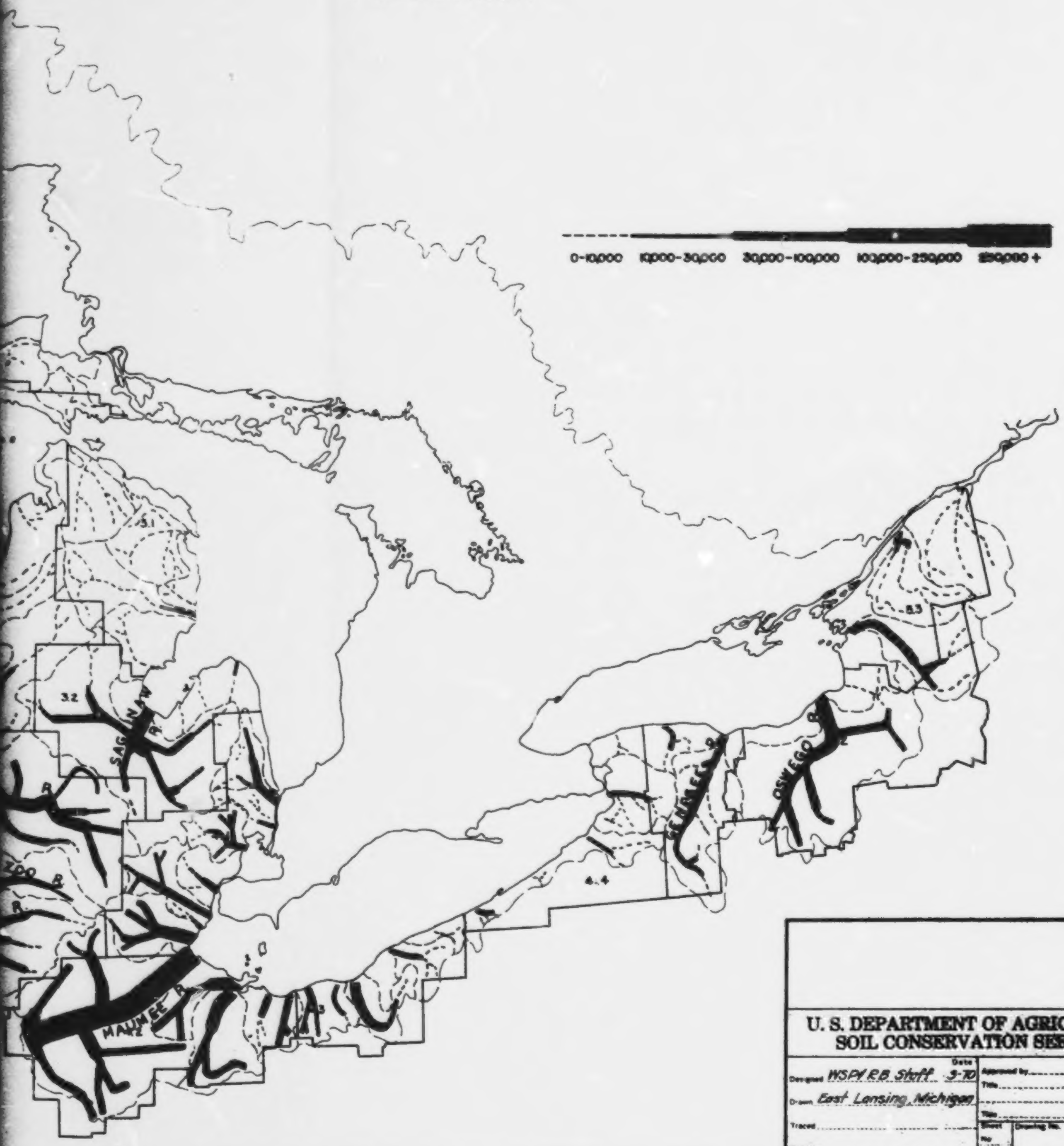


1.2
WOLF R.
2.4
3.2
3.1
SAGINAW R.
GRAND R.
KALAMAZOO R.
ST JOSEPH R.
2.2
MAUMEE R.

GREAT LAKES BASIN

AVERAGE ANNUAL SEDIMENT YIELD ALONG MAJOR TRIBUTARIES
TONS PER YEAR

PRELIMINARY



0-10,000
10,000-30,000
30,000-100,000
100,000-250,000
250,000 +
3.1
3.2
SAGINAW R.
R.
MAUMEE R.
4.2
4.3
4.4
GENESEE R.
OSWEGO R.
5.3

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed WSPY R.B. Staff Date 3-70
Drawn East Lansing, Michigan
Traced
Checked
Approved by
Title
Title
Sheet No. of
Drawing No.

this season. This is an estimate. Actual depths may be about two feet above that because we expect the lake to perhaps be something like two feet above the low water this year. Some harbors are relatively unaffected this year while others will have their depth cut in half. And those where the drastic change occurs are largely caused by sand bars across the entrance of the harbor.

We are unable to estimate exactly what the difference between low water and actual water would be next year, but the column on the right shows what the impact would be below low water if dredging were again deferred this year and next year.

This slide shows the same depths for Wisconsin harbors.

And finally Illinois and Indiana Harbors.

Now, for those who are interested, I would be glad to discuss later any specific harbor on the lake with you. We have more detailed information and some estimates of the economic impact of not dredging any of those specific harbors, including what type of shipping comes in there in most cases and which type of shipping will be affected by a failure to dredge this year or next year.

Copies of these slides, as I mentioned, and a few copies of the brochure summarizing the Pilot Study Program on Dredging will be available near the door as you go out.

(Which said slides and brochure will be on file at the Great Lakes Regional Office, FWPCA, Chicago.)

(The following exhibits were submitted by Col. Stewart for inclusion in the record:)

DREDGING AND DISPOSAL
LAKE MICHIGAN
CALENDAR YEAR 1969 (ACTUAL)

		QUANTITIES(CUBIC YARDS)		
		UNPOLLUTED	POLLUTED	
		OPEN LAKE	CONFINED	OPEN LAKE
20 PROJECTS		1,746,821		
3 PROJECTS			293,733	
12 PROJECTS				424,574
TOTAL		1,746,821	293,733	424,574
GRAND TOTAL	2,465,128			
% of Totals		70.86	11.92	17.22

(Dredging performed at 25 harbors - of which 9 contain both polluted and unpolluted material.)

CALENDAR YEAR 1970 (PROGRAMMED)

		QUANTITIES(CUBIC YARDS)		
		UNPOLLUTED	POLLUTED	
		OPEN LAKE	CONFINED	OPEN LAKE
21 PROJECTS		1,830,500		
9 PROJECTS			2,330,000	
11 PROJECTS				322,000
TOTAL		1,830,500	2,330,000	322,000
GRAND TOTAL	4,482,500			
% of Totals		40.9	52.0	7.1

(Dredging programmed at 30 harbors - of which 11 contain both polluted and unpolluted material.)

PERCENTAGES OF POLLUTED DREDGINGS

	CONFINED	OPEN LAKE	TOTAL(CU. YD)
CY 1969 (ACTUAL)	40.89%	59.11%	718,307
CY 1970 (PROGRAMMED)	87.9%	12.1%	2,652,000

DISPOSAL OF DREDGING

LAKE MICHIGAN HARBORS

CALENDAR YEAR 1970 (PROGRAMMED)

WISCONSIN PROJECTS	ESTIMATED QUANTITIES (CUBIC YARDS) UNPOLLUTED OPEN LAKE	CONFINED	POLLUTED OPEN LAKE
Green Bay Harbor			
Outer Channel	1,000,000		
Inner Channel		1,400,000	
Kenosha Harbor			30,000
Kewaunee Harbor			30,000
Manitowoc Harbor			
Outer & Inner Harbor			40,000
River		20,000	
Milwaukee Harbor			50,000
Port Washington Harbor	12,000		
Racine Harbor		30,000	
Sheboygan Harbor			25,000
Sturgeon Bay			
Outer Harbor	10,000		
Inner Channel			30,000
Two Rivers Harbor			
Outer Harbor	50,000		
TOTALS	1,072,000	1,650,000	205,000

DISPOSAL OF DREDGING
LAKE MICHIGAN HARBORS
CALENDAR YEAR 1970 (PROGRAMMED)

MICHIGAN PROJECTS	ESTIMATED QUANTITIES (CUBIC YARDS) UNPOLLUTED OPEN LAKE	CONFINED	POLLUTED OPEN LAKE
Charlevoix Harbor	20,000		
Frankfort Harbor			
Outer Channel	28,000		
Turning Basin			12,000
Grand Haven Harbor			
Outer Channel	50,000		
Inner Channel			50,000
River Channel		40,000	
Grays Reef Passage	500		
Holland Harbor			
Upper Channel		50,000	
Entrance Channel	50,000		
Leland Harbor	23,000		
Ludington Harbor	55,000		
Manistee Harbor	60,000		
Muskegon Harbor	100,000		
Pentwater Harbor	50,000		
Portage Lake Harbor	40,000		
Saugatuck Harbor	55,000		
South Haven Harbor			
Outer Channel	67,000		
Turning Basin			3,000
St. Joseph Harbor			
Entrance Channel	50,000		
Upper Channel			32,000
White Lake Harbor	50,000		
TOTALS (MICHIGAN)	698,500	90,000	97,000

DISPOSAL OF DREDGING
LAKE MICHIGAN HARBORS
CALENDAR YEAR 1970 (PROGRAMMED)

	ESTIMATED QUANTITIES (CUBIC YARDS)		
	UNPOLLUTED OPEN LAKE	CONFINED	POLLUTED OPEN LAKE
ILLINOIS AND INDIANA PROJECTS			
ILLINOIS			
Chicago River		180,000	
Waukegan Harbor			
Entrance Channel	20,000		
Inner Channel			20,000
TOTAL (ILLINOIS)	20,000	180,000	20,000
ILLINOIS & INDIANA			
Calumet Harbor & River		200,000	
INDIANA			
Indiana Harbor		200,000	
Michigan City Harbor			
Upper River		10,000	
Outer Harbor	40,000		
TOTAL (INDIANA)	40,000	210,000	
GRAND TOTAL			4,482,500
% of Totals	40.9	52.0	7.1
Polluted Dredging			2,652,000
% of Polluted Dredging		87.9	12.1

DREDGING AND DISPOSAL
POLLUTED MATERIAL
LAKE MICHIGAN HARBORS

WISCONSIN PROJECTS	QUANTITIES (CUBIC YARDS) CONFINED 1969 ACTUAL	CONFINED 1970 PROGRAMMED	OPEN LAKE 1969 ACTUAL	OPEN LAKE 1970 PROGRAMMED
Green Bay - NW		1,400,000		
Green Bay - O&M		200,000		
Kenosha Harbor			5,000	30,000
Kewaunee Harbor			79,375	30,000
Manitowoc		20,000	53,950	40,000
Milwaukee Harbor			60,500	50,000
Racine Harbor		30,000		
Sheboygan - Inner			43,825	25,000
Sturgeon Bay - Inner			62,025	30,000
Two Rivers - Inner			4,000	
TOTAL (WISCONSIN)		1,650,000	308,675	205,000

ILLINOIS AND INDIANA PROJECTS	QUANTITIES (CUBIC YARDS) CONFINED 1969 ACTUAL	CONFINED 1970 PROGRAMMED	OPEN LAKE 1969 ACTUAL	OPEN LAKE 1970 PROGRAMMED
ILLINOIS				
Chicago River		180,000		
Waukegan - Inner			13,400	20,000
ILLINOIS & INDIANA				
Calumet Harbor	182,359	200,000		
INDIANA				
Indiana Harbor		200,000		
Michigan City - Upper River		10,000		
TOTAL (ILL. & IND.)	182,359	590,000	13,400	20,000

DREDGING AND DISPOSAL
POLLUTED MATERIAL
LAKE MICHIGAN HARBORS

MICHIGAN PROJECTS	QUANTITIES (CUBIC YARDS) CONFINED 1969 ACTUAL	1970 PROGRAMMED	OPEN LAKE 1969 ACTUAL	1970 PROGRAMMED
Frankfort Harbor - Inner			6,099	12,000
Grand Haven - Inner			50,000	50,000
Grand Haven - River	68,819	40,000		
Holland - Upper	42,555	50,000		
South Haven - Inner			1,400	3,000
TOTAL (MICHIGAN)	111,374	90,000	57,499	65,000
GRAND TOTALS	293,733	2,330,000	424,574	322,000

ANTICIPATED SHOALING - LAKE MICHIGAN

HARBOR	PROJECT DEPTH (FEET BELOW LWD)	CONTROLLING DEPTH (FEET BELOW LWD) IF NO DREDGING IS PERFORMED	
		1970	1971
MICHIGAN			
Charlevoix Harbor	18	18	17
Frankfort Harbor	22	20	19
Grand Haven Harbor	21	20.5	20
Grays Reef Passage	25	25	25
Holland Harbor	21	16	14
Leland Harbor	10	9	8
Ludington Harbor	18	18	18
Manistee Harbor	23	19	18
Muskegon Harbor	27	23	21
Pentwater Harbor	16	8	5.5
Portage Lake Harbor	18	9	7
Saugatuck Harbor	16	8	6
South Haven Harbor	21	18	15
St. Joseph Harbor	21	20	18.5
White Lake Harbor	16	15	13.5
WISCONSIN			
Green Bay Harbor	24	21.5	20
Kenosha Harbor	26	23	21
Kewaunee Harbor	20	18	17
Manitowoc Harbor	21	19	17
Milwaukee Harbor	21	17	15
Port Washington Harbor	21	21	21
Racine Harbor	21	19.5	18.5
Sheboygan Harbor	25	23	21
Sturgeon Bay	23	21	20
Two Rivers Harbor	18	17	13
ILLINOIS			
Calumet Harbor & River	27	27	25
Chicago River	21	17	15.5
Waukegan Harbor	22	19	19
INDIANA			
Indiana Harbor	22	16	14
Michigan City Harbor	18	16	14

MR. STEIN: Let's see if the conferees have any questions.

MR. POOLE: Mr. Stein.

MR. STEIN: Yes.

MR. POOLE: Colonel Stewart, since I am not close to the door, could you make copies of these available to the conferees?

COLONEL STEWART: Yes, sir.

MR. POOLE: Thank you.

MR. STEIN: Are there any other comments or questions?

MR. PURDY: I have a question, Mr. Stein.

MR. STEIN: Yes, Mr. Purdy.

MR. PURDY: Colonel Stewart, along the eastern shore of Lake Michigan or western shore of Michigan we have some severe erosion problems. Now, in your, say, disposal of clean dredgings, have you made provisions to place some of the clean sand along some of the sand-starved beaches?

COLONEL STEWART: I don't know of a program in that regard. This may have been done in the Detroit District. I don't have a program on the west shore to do that at this time that I know of.

COLONEL WHITE: I can answer that. We do have--we are working with the State.

MR. STEIN: Why don't you identify yourself.

COLONEL WHITE: Colonel White, the Detroit District.

We have a program working with Mr. Purdy's people to determine whether it is publicly and locally acceptable, primarily in St. Joe and South Haven right now.

MR. PURDY: My point here is that there are some benefits in, say, keeping some of the clean sand in the lake and not disposing this on the land.

COLONEL WHITE: This would be the clean sand that forms in the outer harbor that Colonel Stewart spoke of and this would be used for beach nourishment.

MR. PURDY: Yes.

Mr. Stein, I have a question of the FWPCA. I think I raised it a year ago along this line. Frequently the FWPCA asks for an opportunity to share in the decisions of the State. In this case I would like to ask the opportunity to share in the decisions of the FWPCA on the determination of polluted and nonpolluted dredgings within the harbor.

MR. STEIN: Do you want to answer that?

MR. MAYO: There will be no problem in making those arrangements, Mr. Purdy.

MR. STEIN: We said that--

MR. MAYO: We will do that with each of the conferees.

MR. STEIN: We said that a couple of years ago. I want to be sure that this is done: That is, before the Department of the Interior gives its judgment on whether particular dredgings are polluted dredgings or not that we get the opinion of the State. And, I can visualize no reason why the State representatives, if they wish, should not discuss this directly with us and the Corps people. This is the kind of information we just have to get, and we agreed that the States would be consulted on this when we set this program up. Now, if this isn't working, I see no reason why it shouldn't be made to operate forthwith.

MR. KLASSEN: Mr. Stein.

MR. STEIN: Yes.

MR. KLASSEN: Could I ask the Colonel a question?

The Memorandum of Agreement between the Army Engineers or the War Department and the Department of the Interior that was signed during the last Administration, is this still in effect?

COLONEL STEWART: Yes, it is.

MR. KLASSEN: And the final decision, however, as I recall the memorandum, rests with the Corps of Engineers; they can overrule either FWPCA or a State. Is this still correct?

COLONEL STEWART: Well, I am not sure that I will agree with that.

MR. KLASSEN: I think that is if--

MR. STEIN: Mr. Klassen, let me try this. I think the statutory authority rests with the Corps of Engineers, not with the FWPCA or a State, and this is where the Congress has placed the statutory authority for this job on navigable waters. Now, what the Corps is doing is consulting with us, but this isn't a question of a veto. This is where this lies.

Now, as far as that agreement is concerned, I think the work under that has largely been done, as Colonel Stewart indicated in his report. Again, I think within a few weeks we hope that this will be supplanted by a policy of this Administration on that dealing with the Department of the Interior and the Corps.

COLONEL STEWART: That is correct.

MR. STEIN: Thank you very much, Colonel.

Thank you, Colonel White. Nice to see you again.

Mr. Mayo.

MR. MAYO: The next presentation will be a report from the Pesticides Committee established by the conferees. The report will be given by Mr. Carlos Fetterolf, the Michigan member on the committee.

CARLOS FETTEROLF
AQUATIC BIOLOGIST
MICHIGAN WATER RESOURCES COMMISSION
LANSING, MICHIGAN

MR. FETTEROLF: Chairman Stein, Governors Knowles and Ogilvie, conferees, ladies and gentlemen.

I am Carlos Fetterolf, an aquatic biologist, supervisor of water quality appraisal for the Bureau of

Water Management of the Michigan Department of Natural Resources. Dr. Donald Mount, Director of the FWPCA's Duluth National Water Quality Laboratory, is the chairman of the Technical Committee on Pesticides which is advisory to the Lake Michigan enforcement conference. He asked me as Michigan representative on the Technical Committee to present the committee report.

Since this enforcement conference last convened in early 1969, the United States Food and Drug Administration seized sizable shipments of coho salmon because of excessive concentrations of DDT. This seizure demonstrated the concern of Federal agencies in the public health aspects of pesticides contamination and emphasized the importance of the pesticide problem in the Lake Michigan Basin. Thus, the importance of monitoring pesticides and controlling their input to Lake Michigan assumed a new significance and, as a result, the Lake Michigan Pesticides Committee, without written instructions from the Lake Michigan enforcement conference, assumed the role of the Interstate Pesticides Committee as recommended in the report. The same representatives continued to serve on the committee in its new function and the committee has held four meetings since this conference last convened.

During the same period of time, WARF Institute, Inc., the Wisconsin Alumni Research Foundation, utilizing monies provided to it by the pesticide manufacturing industry, became an active cooperator in the monitoring program and has completed nearly half as many analyses of samples as the rest of the agencies combined. In addition, the United States Department of Agriculture sent a representative to the May 1969 meeting and he discussed with the committee the Department of Agriculture plan for completing an analytical survey of soils and an interview type inventory of pesticide formulators and manufacturers in the Lake Michigan Basin. Approximately 1,400 samples have been collected, of which some 900 have been analyzed.

The Department of Agriculture has provided general statements regarding the results of their investigations. In the summer of 1969 the States were granted Federal monies to aid in initiating their monitoring programs. Unfortunately, the Federal assistance money to the States was not made available until October 1969 and as a result, only Wisconsin, which already had a monitoring program under way, and Indiana, which was assigned a small program, were able to complete a substantial part of their monitoring programs. As of this date, it would appear that the full monitoring program should be under way during the spring and summer of 1970.

The following brief and general conclusions can be drawn concerning our present knowledge of the pesticide problem in Lake Michigan, utilizing as a basis the information collected principally by WARF Institute, Inc., the State of Wisconsin, the State of Indiana, and the Bureau of Commercial Fisheries at Ann Arbor, Michigan.

1. The concentration of DDT and its analogs in open lake water of Lake Michigan is nearly always less than 10 parts per trillion and is often less than 5 parts per trillion. The concentration of dieldrin is lake water is nearly always less than 5 parts per trillion and usually less than 3 parts per trillion.

To aid the public in comprehending the magnitude of this concentration, I would like to tell you that a part per trillion is equivalent to one inch in thirty round trips to the moon. Biological magnification enables the fish to concentrate this infinitesimal amount a millionfold to 20 parts per million.

2. The monitoring program to date has not identified major sources of pesticides that could have contributed in a major way to the problem in Lake Michigan. A few small industrial dischargers have been identified during the year and according to the reports of the States involved corrective action has been taken.

3. The concentrations of DDT in the Wisconsin and Indiana tributaries to Lake Michigan appear to be generally less than 50 parts per trillion, with some exceptions.

4. The concentration of DDT in fish flesh has not changed perceptibly in the past five years and at present is about five times higher than any of the other Great Lakes. It is higher in fish from the southern basin than in those from the north basin of Lake Michigan. (See figure 1.)

5. There was no mass mortality of coho sac fry in Michigan hatcheries during the spring of 1969 as there had been in the spring of 1968, possibly due to revised hatchery operations.

6. Polychlorinated biphenyls (PCB's), water contaminants which act as a toxicant in a similar manner to the chlorinated hydrocarbon pesticides, have been reported in measurable quantities in the Lake Michigan system. They have probably confused some pesticide measurements, but certainly DDT and dieldrin remain a significant problem, even though the recent discovery of PCB contamination has clouded past analytical results somewhat.

7. The present contamination of Lake Michigan is apparently a result of one of two things: a) much higher sources in previous years that are not presently discharging in similar volumes, or b) a result of the general contamination of the entire basin because low concentrations of DDT are still measurable in nearly all tributaries.

8. The use of DDT for Dutch Elm Disease control has been drastically reduced. This could have been a significant source of DDT in the past. The importance of this use should continue to diminish considerably in the future.

9. Clams, used as biological monitors in our

programs, have accumulated concentrations of DDT in the water only in those cases where the water contained high concentrations of DDT. In low concentrations the clams were apparently not sensitive enough to detect such concentrations.

The following needs have been identified by the committee as being priority items for the coming year:

1. Complete one season of tributary sampling as outlined by the Lake Michigan Pesticides Committee in the drainage area located in the State of Michigan.

2. Develop a mass balance for pesticide input and output in Lake Michigan.

3. Institute the weekly monitoring program at the Chicago water intake, in order that the trend of pesticide contamination in Lake Michigan can be established.

4. Make positive identifications of the pesticides found in the samples thus far collected through the use of infrared or mass spectrometry.

5. Determine the concentrations and sources of polychlorinated biphenyls in Lake Michigan and also evaluate the effect of polychlorinated biphenyls on

aquatic organisms.

6. Determine the pesticide contribution from rain-out and stormwater runoff in the basin.

7. Determine the point sources of pesticide contributions to the tributaries so that the present low-level contamination in the tributaries can be reduced significantly.

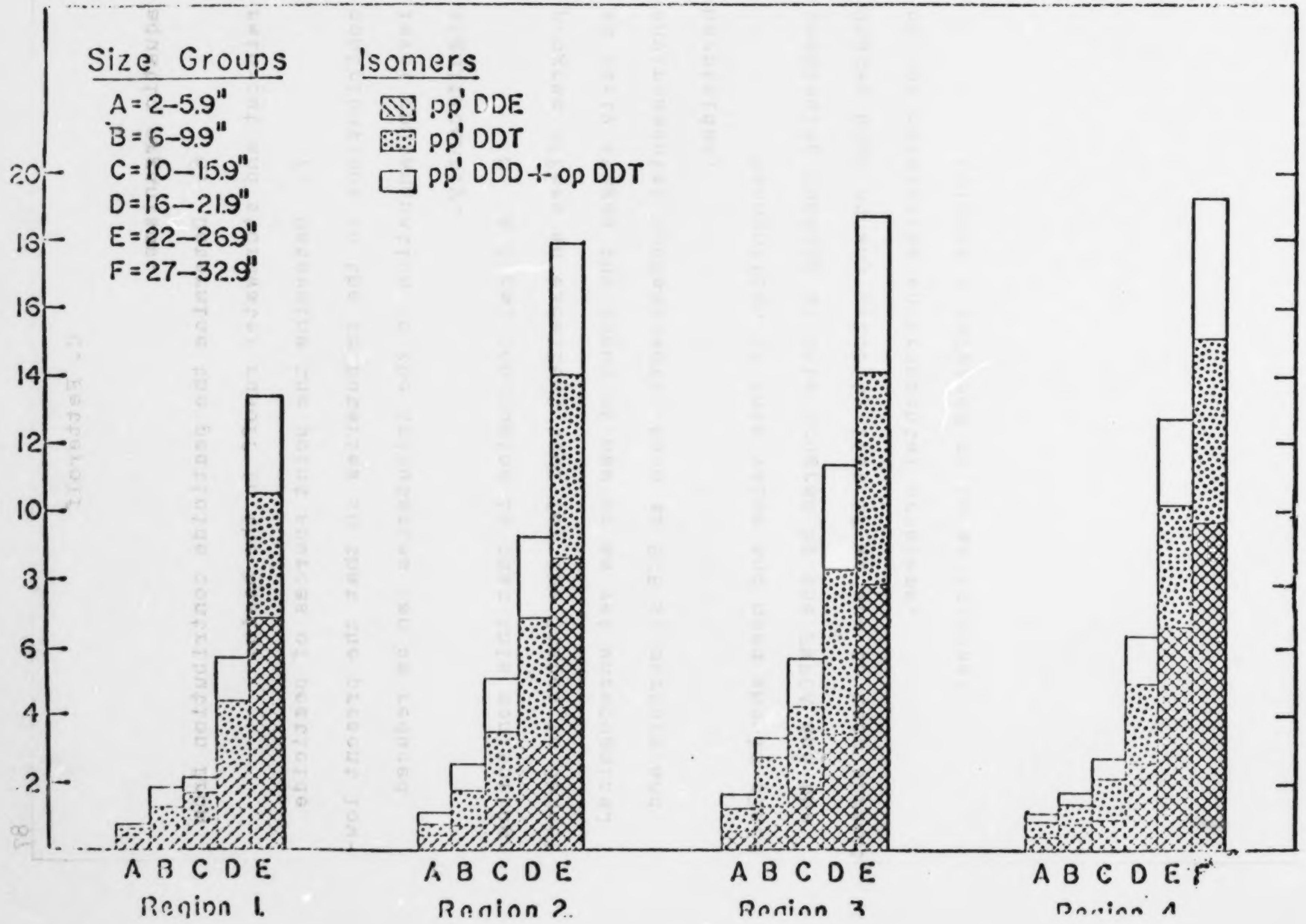
8. A final conclusion is that this monitoring program offers an excellent tool for the States to detect at early stages the input of new or as yet unrecognized environmental contaminants, such as PCB's, mercury and herbicides.

Recognition of this value and need should place continuing funding of this program by the FWPCA and the States high on any priority list if we are to keep abreast of our developing environmental problems.

(Figure 1 referred to is as follows:)

Fig.

DDT Concentrations in Lake Michigan Lake Trout ('66-'69) as Related to Region of Lake & Fish Size



MR. STEIN: Thank you.

Are there any comments or questions?

MR. KLASSEN: Just one, Mr. Chairman.

I was interested in your comments on PCB because I think there is only one company in the United States that makes it and it is, as you know, the primary ingredient in Aroclor, without which we would have no subways, electric transmissions, elevators and all that.

And what I am wondering, in your study, did you differentiate between the presence of DDT and the interference of PCB? I think you mentioned this and I didn't get this point.

MR. FETTEROLF: In the past, analytical procedures have not generally differentiated between PCB's and the chlorinated hydrocarbon pesticides. As soon as it was discovered in the last year or so that the PCB's interfered in the analytical procedures for chlorniated hydrocarbon insecticides there have been methods developed to separate these two components before analysis. All laboratories involved in this sort of work are now performing these separations.

MR. KLASSEN: Were these separations included in your study of DDT--or was the DDT content that you found in the lake actual DDT or could it have been PCB?

MR. FETTEROLF: I would like to refer that question to John Carr or Donald Mount.

Is John Carr here?

MR. STEIN: Don?

MR. FETTEROLF: Don?

DR. MOUNT: My name is Donald Mount, FWPCA, Duluth, Minnesota.

Most of the analyses that were made did not separate PCB's from DDT. However, the study performed or the analyses performed by the Wisconsin Alumni Research Foundation, WARF, Inc., I guess it is called now, did attempt to make this separation and did present results for each in their report to the committee and they are very uncertain at this time as to the validity of these percentages, but it would appear that a significant percentage, perhaps as much as 10 to 20 percent, might be PCB's rather than DDT.

MR. STEIN: Don't run off, Don. Stay up there.

Are there any more questions?

MR. KLASSEN: No, except, Mr. Chairman, this is, we all recognize, quite an important phase of this whole DDT program, because I believe that the PCB that has been found in Lake Michigan--and incidentally in the Fiji Islands; where it comes from there nobody knows, but it has been found there--is in a different form than that which is manufactured. And I am glad to know that the committee recognizes some of these problems because this is something that could alter the whole picture of the present DDT pesticide problem that apparently we are faced with.

MR. FETTEROLF: Mr. Klassen.

MR. KLASSEN: Yes.

MR. FETTEROLF: Quality control in this program has been of paramount concern to the committee. In one of our recommendations to the conferees we state that positive identification of the pesticides should be made through infrared spectometry and we are planning to send a certain portion of all the samples we take to consulting laboratories which have the capability to identify these materials exactly.

I might also add that the Federal Water Pollution Control Administration has recognized this problem and has established a committee of laboratory experts whereby the States may send their analytical chemists and consult among themselves so that they can agree on standard methods for analyses of these materials.

MR. STEIN: Well, in looking at this, I think I realize the difficulty of identifying these materials in the minute amounts with which you are dealing. However, I might feel a little more secure if I didn't read your results that 1) you need another complete season of tributary sampling, 2) to develop a mass balance for pesticide input and output in Lake Michigan, 3) to develop a monitoring program at the Chicago water intake, and 4) make positive identification of pesticides. You can almost predict one of these technical committees coming up with the notion that further study or further research is needed. We know you will come up with that.

I am looking for something whereby we are coming up with positive results or a conclusion whether these parts per trillion are safe or they are not safe, and whether or not we have to do something about it. How long is it going to take us to get that?

DR. MOUNT: Mr. Chairman, I don't think there is any question that these are important. The FDA has seized salmon and I think that identifies it as a problem and something must be done about it.

MR. STEIN: Well, I think so. But again, and this is what I wanted to bring out, because the kind of trace elements, even though they were indicated in parts per trillion, was certainly about the same that we had problems with on the lower Mississippi, as you recall, Dr. Mount, and presumably even though they are in parts per trillion the fish can concentrate them and we have problems here.

So you would say we do have a pesticide problem in Lake Michigan as a pollution problem and these pesticides must be controlled, is that correct?

DR. MOUNT: Yes, sir.

MR. STEIN: What pesticides do you think are too high? Would you name them?

DR. MOUNT: DDT is clearly one so far and dieldrin is a probability.

MR. STEIN: Right. Thank you.

Yes, sir.

MR. MAYO: Gentlemen, do we have any early indications of the toxicity of the PCB compounds as far as aquatic life are concerned?

DR. MOUNT: We held a conference in Duluth just a couple of weeks ago to which we invited as many people as we know about who are working or have familiarity with these compounds. I should start out by saying you must recognize that this is a whole series of compounds, it is not just one, and it would appear that the amount of chlorination of the individual compounds has a bearing on its toxicity and it is reversed between coldblooded animals and warmblooded. I can't remember which way it goes now, but in one case the low chlorinated compounds are more toxic to one group and the high chlorinated to the other. But these range from less than a part per million--I am talking about lethal levels now--less than a part per million to something over the water solubility of the compounds, which may be many parts per million.

There is virtually no information at this time as to what we might call the safe levels or those levels which do not cause harm to the organisms upon prolonged exposure. The evidence so far, I think, clearly indicates that we may be facing a problem with PCB's comparable to DDT and some of the others and that is that the permissible concentration in the environment may be determined by the amount of residue that results in the fish flesh and as such is permissible for human consumption rather than direct harm to the organisms. This is not firm yet, but it certainly looks like it may be that way.

MR. MAYO: I believe Mr. Klassen mentioned that there is only one current source, one manufacturing source, of the PCB compound?

MR. KLASSEN: In the United States. There is one in West Germany, possibly one in Russia, they think that they have stolen the patents, this is a pure rumor, and there is one in the United States and one in France. The only manufacturer in the United States is Monsanto and it is the principal ingredient in Aroclor, which is a non-flammable material, a fire resistant material, that is in all electrical transmission equipment.

MR. MAYO: Do we have any current indication on how much volumewise is being used in these compounds in the basin at the present time?

MR. FETTEROLF: Dr. Mount and I are arguing. (Laughter.) We would just as soon not have it in the record.

MR. STEIN: Go off the record.

(Off the record.)

MR. STEIN: Let's go back on the record, please.

MR. PURDY: Mr. Chairman, you mentioned about the problem of the DDT and is it a problem and, if so, what is being done about it. Other States, I know, have taken action, but I would like to place on the record that the registration labeling of DDT for a number of uses in Michigan has been removed so that now its use is restricted to, say, lice control, bat control and one other use. There are three uses that can be made of it.

With respect to the PCB's, we became concerned about this. They are used in, say, electrical gear, but they are also used in, say, coolants used in the machining operations in the automotive industry and metal-working industry, and we have reason to believe that the consumptive use in Michigan is somewhere in the neighborhood of 300,000 pounds a year. In light of this concern, we have alerted all of what we think might be the major users in Michigan to review this use, also to review the use in relationship to how much of this material can be lost to the water environment through their waste sewers, and it is my understanding that a number of these companies now are, say, turning to other substances to use for their processing operations.

MR. MAYO: Would it be--

DR. MOUNT: Mr. Chairman, may I comment?

MR. STEIN: Yes, go ahead.

DR. MOUNT: Two items which may be of interest to the conferees.

First, the industry was represented at our meeting in Duluth, and while we did not have the actual production figures, we were assured that the production of these PCB's has not increased precipitously in the last few years, but, rather, has been a continual growth rate. It was a conclusion we reached in this group in Duluth that, therefore, the problem was not one which was going to explode suddenly because the use has been regular.

Secondly, we are serving as somewhat of a coordinating point at the National Water Quality Lab in Duluth and are planning to keep in touch with the people working on PCB's throughout the country as well as, of course, the work that our own agency does, and if the conferees would like, at the next session perhaps we could prepare some sort of a summary of what our present knowledge is at that time.

MR. STEIN: Well, Dr. Mount, I am not sure, with the developments here, that the next session is going to be so long off. Do you think you can have that in about a month? Is that all right?

DR. MOUNT: Well, we can give you what we have at that time.

MR. STEIN: All right. Thank you.

Any other comments or questions?

Thank you very much.

MR. MAYO: The next Federal presentation will be given by Mr. Carlysle Pemberton of the Great Lakes Regional Basin Office of the FWPCA dealing with the monitoring program, vessel regulations, and the contingency planning activities for oil spills and hazardous materials.

CARLYSLE PEMBERTON, JR., DIRECTOR
OFFICE OF TECHNICAL PROGRAMS
GREAT LAKES REGION, FWPCA
CHICAGO, ILLINOIS

MR. PEMBERTON: Mr. Chairman, conferees, ladies and gentlemen.

I am Carlysle Pemberton, Director of the Office of Technical Programs, Great Lakes Region, FWPCA. I have a brief report on three subjects, Lake Michigan Basin monitoring, contingency plan for pollutional spills, and Federal vessel waste legislation.

Each of the State water pollution control agencies and FWPCA are participating in a State-Federal long-term monitoring program to evaluate water quality in the Lake Michigan Basin. Essentially the State-Federal monitoring program consists of those stations recommended by the Monitoring Committee in its report presented to the conferees at the second session of the conference.

The Monitoring Committee recommended that the States coordinate monitoring of tributary streams, beaches, and municipal water intakes and FWPCA monitor the open waters of the lake. The committee also recommended that all data collected from these stations and from those recommended by the Pesticides Committee be entered into the FWPCA STORET System and be made available semi-annually by FWPCA to each of the participating agencies for evaluation.

Each of the State agencies has begun to implement its portion of the program. FWPCA grant funds have been issued as requested by the States in support of the pesticides program. Most of the tributary stations selected were already sampled regularly by the States. The open water stations selected were previously sampled at least once by FWPCA. The Great Lakes Region plans to implement the open water portion of the program this spring. All station location information and water quality data submitted to FWPCA by the States is being entered into the STORET System. A printout should be available for evaluation shortly after July 1. Implementation of all phases of the Monitoring Committee recommendations is expected by the end of the fiscal year.

Contingency plan.

The interim multiagency contingency plan for the

Great Lakes Region of FWPCA was first developed in July 1968 and updated in April 1969. The initial phase of regional contingency planning was conducted on the Federal level to develop a coordinated Federal response effort. We are now revising the format somewhat to conform to a nationwide standardized format.

The FWPCA encourages the development of State and local governmental and private capabilities to minimize the effects of a pollutional discharge of oil or other hazardous materials. However, while capabilities are being developed to handle spills, emphasis should also be placed on keeping pollutional material out of the water by means of educational and preventive programs. The formation of civic and industrial "mutual aid" organizations will be needed if an effective spill control program is to be developed. The FWPCA plans to work with the State agencies designated by their respective State Governors in the development and coordination of Federal-State response capabilities. Additionally, the FWPCA plans to continue working with local governmental and private organizations in the development and coordination of Federal-local response capabilities.

C. Pemberton, Jr.

Federal Vessel Waste Legislation.

The Congress last week passed a compromise bill amending the Federal Water Pollution Control Act which contains the following provisions relating to vessel pollution. This is a summary and not an extract from the bill.

The law applies to any vessel used or capable of being used on the navigable waters of the U. S. New vessels are units whose construction starts after promulgation of the standards called for by this law, and existing vessels are units whose construction started prior to the promulgation of the standards. The law applies to United States own vessels unless excepted by the Secretary of Defense in the interest of national security.

Not later than two years after enactment of the law the Secretary of the Interior, after consultation with the Coast Guard, shall promulgate Federal standards of performance for marine sanitation devices which shall be designed to prevent the discharge of untreated or inadequately treated sewage into navigable waters.

The Coast Guard shall promulgate regulations governing the design, construction, installation and operation of any marine sanitation devices.

Existing vessels that have devices installed according to State statutes or the PHS "Handbook on Sanitation and Vessel Construction 1965" will be considered in compliance until they need replacement or are found not to be in compliance.

Initial standards and regulations become effective for new vessels two years and for existing vessels five years after promulgation.

The Coast Guard can distinguish among classes, types, sizes, new, and existing vessels in promulgating regulations.

Before the standards and regulations are promulgated everybody interested, including Federal and State agencies and private industries, have to be consulted by the Secretary of the Interior and the Secretary of Transportation.

After the effective date of the standards and regulations, no State or political subdivision can adopt or enforce any law or regulation respecting these devices in connection with any vessel covered by this law. The

State can, however, prohibit discharge of sewage in any waters of the State where it is needed to implement water quality standards, with the approval of the Secretary of the Interior.

MR. STEIN: Thank you, Mr. Pemberton.

Any comments or questions?

Yes, Mr. Purdy.

MR. PURDY: Mr. Pemberton, in some of the earlier legislation with respect to vessel pollution it provided that the States could continue to enforce their existing laws and regulations until such time as the Federal regulations go into effect. Is this, say, still in the legislation or do we now have a possible gap of seven years on new vessels?

MR. POOLE: Old vessels.

MR. PEMBERTON: I think there is not any gap. I don't have a copy of the bill as reported out of the joint committee, but my information is that there is no gap in enforcement.

MR. PURDY: Well, if there is not some provision in it to allow the States to continue to enforce those, if we are preempted, there is a gap until the

Federal regulations are developed.

MR. PEMBERTON: Well, the reference is to after the effective date of the standards and regulations that are written and there is no prohibition prior to that time in the act, as far as I know. As I said, I haven't been able to get a copy of the bill yet.

MR. POOLE: It is, though, after the promulgation of the regulation, not after the effective date in the act, which as Ralph said is five years for existing vessels and two years for new, as I understand it?

MR. PEMBERTON: After the effective date of the standards and regulations, yes.

MR. POOLE: We are just working on the regulations. I wish I knew what to do.

MR. PEMBERTON: Well, both houses have passed this bill and I expect that it will be signed very shortly and will be available in printed form, but I haven't received it yet.

MR. STEIN: I don't believe you have answered the question, Mr. Pemberton. Let's try it again.

It is true that this doesn't come into effect until you have the effective dates in the standards and regulations. "Initial standards and regulations become effective for new vessels two years and existing vessels five years after promulgation." If we don't have the answer here I am going to try to get back to Washington and hope to have an answer to this before the conclusion of the conference.

But the point is we are going to have a two-year or five-year lag after we put the regulations out before they become effective. During that time, the question, as I understand it, is are the State regulations effective?

I would suspect they are, but unless you have a definitive answer, I think the best thing to do would be to call back to the people who have the text of the statute and we may be able to give the answer to that this afternoon.

Do you have a contact in Washington, Carlysle, or do you want me to do it?

MR. PEMBERTON: The people I have been contacting so far have not either received a text of the new act. I can try again. They may have it by today.

MR. STEIN: Well, I tell you, let's go off the record.

(Off the record.)

MR. STEIN: Let's go back on the record.

MR. PEMBERTON: I will be glad to try to find out.

MR. STEIN: Thank you. But let's try to get that answer for these people, because I think they should have a definite one on that and I am sure the law has covered that one way or the other.

Are there any other questions?

MR. FRANGOS: Mr. Chairman, I have a question that is not clear to me from the handout. Are foreign flag vessels covered by this legislation?

MR. PEMBERTON: Yes, the law applies to any vessel used or capable of being used on the navigable waters of the U. S., that is any vessel.

MR. FRANGOS: Thank you.

MR. STEIN: Any further comment or question?

If not, thank you, Mr. Pemberton.

MR. MAYO: The next Federal presentation will be given by Mr. Clifford Risley of the Great Lakes Regional Office staff of FWPCA in connection with the

Research and Development Grant Program.

CLIFFORD RISLEY, JR., DIRECTOR
OFFICE OF RESEARCH AND DEVELOPMENT
GREAT LAKES REGION, FWPCA
CHICAGO, ILLINOIS

MR. RISLEY: At the initial Lake Michigan enforcement conference in February of 1968 a statement was made by Dr. Leon Weinberger who was, at that time, the Assistant Commissioner for Research and Development. He reported on the technology then available for waste treatment for phosphorus removal. He concluded that more than 80 percent of the phosphates could be removed with existing technology for a cost of less than 5 cents per 1,000 gallons.

Since that time a considerable effort has been made toward developing improved methods of removing the nutrient phosphorus from municipal wastewaters. Pilot scale and full-scale plant demonstrations have been and are being carried on to provide the technology and actual cost figures for the design engineers' and plant operators' information. Process selection will depend on specific wastewater characteristics, existing facilities, desired effluent quality, and economic considerations.

Processes that have been and are being demonstrated which show good phosphorus removal include:

Conventional Treatment

Digester Supernatant Treatment

Chemical Addition in Primary, Secondary and Tertiary Stages of Treatment

Moving Bed Filtration

Conventional treatment techniques of settling and biological oxidation are capable of removing some phosphorus. Depending on the degree of treatment, phosphorus removal ranges from 5 percent to 50 percent. In order to get the higher removals of phosphorus it is necessary that the digester supernatant be treated to keep the solubilized phosphorus from escaping separation.

Digester supernatant treatment can be accomplished with lime clarification and ammonia stripping; 96 percent of the phosphorus in the supernantant can be removed in this process. Total operating costs for digester supernatant treatment, including carbon dioxide stripping, lime clarification and ammonia stripping, are estimated to be about 30 cents per 1,000 gallons of supernatant, which is equivalent to a cost of 1.0 cent to 1.5 cents per 1,000 gallons of total plant flow.

In chemical precipitation, the current state of the art of phosphorus removal technology indicates that chemical precipitation is the most economical method of removing phosphorus from municipal wastewater. The alternatives for the design engineer to consider include the choice of chemicals, either iron, aluminum or lime, and the point of chemical addition, primary, secondary or tertiary. The decision as to where to add the chemicals is dependent to a large extent on the other unit processes being utilized in the treatment train.

Chemical treatment for phosphorus removal in raw sewage should be thought of as a two-step operation: 1) precipitation of the soluble phosphorus and 2) removal of the insoluble phosphorus. Iron and aluminum systems are used to coagulate the soluble phosphorus along with sodium or calcium hydroxide to achieve optimum flocculation. Insoluble phosphorus is removed by flocculation with anionic polymers and settled or filtered out. Average removals from two different plants range from 72 percent to 84 percent for total phosphorus. These plants

C. Risley, Jr.

are in Grayling, Michigan, and Mentor, Ohio, respectively.

The operating cost of chemical addition to the primary depends upon the choice of chemical systems, chemical costs, transportation costs, and handling costs for the additional inorganic sludge. Capital costs will include chemical storage facilities, slurry and feeding systems and, where necessary, additional mixing and flocculation facilities. Total operating costs have been estimated for facilities like Lake Odessa and Grayling, Michigan, to range from a possible low of 1.0 cent per 1,000 gallons to 5.0 cents per 1,000 gallons. The chemical costs for the Mentor, Ohio, plant, which utilizes waste pickle liquor, are estimated to be 2.3 cents per thousand. An additional 1.0 cent per 1,000 gallons is required to handle the excess sludge through digestion and vacuum filtration.

Another approach is chemical addition to the aerator. A full-scale evaluation of a 2 million gallon per day plant at Pomona, California, using alum and aluminate as mineral addition to the areators, showed overall phosphorus removals from 78 percent to 96 percent. This mineral addition has also produced a better settling mixed sludge.

The primary operating cost for chemical addition to the aerator is the cost of the chemicals. To achieve 90 percent phosphorus removal in a wastewater containing 10 milligrams per liter of phosphorus in the primary effluent, the alum cost would be 2.4 cents per 1,000 gallons at a mole ratio of 1.4:1 alum to phosphorus. The only additional costs are the amortized cost of the chemical feed system and the operating costs associated with handling the increased quantity of sludge. Total operating and maintenance costs are estimated to be 3.6 cents per 1,000 gallons.

In chemical treatment with lime, the lime requirements for phosphorus removal are independent of the influent phosphorus concentration. They are dependent on the wastewater alkalinity and the operating pH. Phosphorus removal by lime treatment is a two-step process involving the insolubilization of the various forms of phosphorus and the physical separation of the particulate phosphorus from wastewater.

Single-stage lime clarification at Washington, D. C., and Lebanon, Ohio, show that 85 percent phosphorus removal can be accomplished for 3.78 cents to 6.0 cents per 1,000 gallons. This includes capital amortization, land amortization, operation and maintenance, cost of chemicals, and cost of sludge disposal by hauling to the landfill, which is a 25-mile one-way trip.

In tertiary chemical treatment with alum, excellent phosphorus removal can be obtained by tertiary alum clarification. The FWPCA-Lebanon pilot plant results show a 90 percent phosphorus removal from the settled alum treated secondary effluent. When filtered through granular carbon adsorption, the phosphorus removal jumps to 96 percent with a suspended solids removal of 97 percent.

An alternative to chemical treatment and settling is chemical precipitation and filtration. A new filter technology involves the concept of a moving sand bed that is constantly being backwashed. In theory, 1 percent of the filter is being backwashed 100 percent of the time compared to the conventional practice of backwashing 100 percent of the filter 1 percent of the time.

Alum coagulation and moving bed filtration of unsettled trickling filter effluent can produce a 97 percent phosphorus removal. The capital costs of a 1 mgd moving bed filter facility are estimated to be $190,000. Erection costs, including influent pumps and all electrical and plumbing, are an additional $90,000. The total operating costs, including amortization of capital costs, is estimated to be 13 cents per 1,000 gallons. Sludge disposal costs with a rotary pre-coat vacuum filter are estimated to cost an additional 2 to 3 cents per 1,000 gallons based on experience with water treatment sludges.

Several alternative methods for phosphorus removal are available. Phosphorus removal costs range from 13 cents per 1,000 gallons for the two-stage lime treatment of raw sewage to attain 99 percent removal at 1 mdg to a potential low of 1.5 cents per 1,000 gallons for the use of waste pickle liquor in the primary to achieve an 80 percent phosphorus removal.

In the process of removing phosphorus several other benefits occur, including better solids and BOD removal.

In the Lake Michigan Basin there are several demonstration grants in an active status that will continue to upgrade our phosphorus removal technology and our cost information. Among them are: Traverse City, Michigan; Grand Rapids, Michigan; The Metropolitan Sanitary District of Greater Chicago; Green Bay, Wisconsin; and Milwaukee, Wisconsin. We have asked Mr. Ray Leary to present a report on the Milwaukee, Wisconsin, phosphorus removal demonstration plant following my presentation.

Now I would like to take a few moments to mention the storm and combined sewers research program. We find that storm and combined sewer overflows to our lakes and streams continue to be a major source of water pollution.

The Federal Water Pollution Control Administration is participating in several contracts and grants in the storm and combined sewer area to seek out solutions to this problem. Locations of these projects in the Lake Michigan Basin are: Chicago, Illinois; East Chicago, Indiana; Muskegon, Michigan; Kenosha, Wisconsin; and Milwaukee, Wisconsin. A brief description of these projects is attached to my statement for the conferees' information.

Nationally, studies and demonstration grants and contracts are beginning to provide some alternative methods for handling our storm and combined sewer problems. Treatment methods which are under investigation include:

1. Microstraining
2. Dissolved Air Flotation, both total and partial
3. Rotating Biological Contactor
4. High Rate Plastic Trickling Filters
5. Ultrasonic Filtration
6. High Rate Sand Filtration
7. Cyclones
8. Oxidants
9. Chlorination and Ozonation
10. Polymer Additives

Since the storm and combined sewer problem is a major pollution concern in the Great Lakes, we are preparing to take this up in detail in a special session. This will be a "Storm and Combined Sewer Symposium" for the Great Lakes Region to present some of the promising alternatives to sewer separation.

Thank you.

(Attachment to prepared statement follows.)

DESCRIPTION OF STORM AND COMBINED SEWER PROJECTS

Chicago, Illinois

This will evaluate the effectiveness of employing a deep tunnel system within a highly developed urban area to temporarily store excess combined sewer flows for return to the sewage treatment plant during off-peak hours. This demonstration will reduce the discharge of untreated combined sewage to the receiving stream and minimize overloading the waste treatment plant. Construction has not yet been completed.

East Chicago, Indiana

This project will evaluate the effectiveness of treating combined sewer overflows in a very deep detention basin having aerobic and anaerobic levels of treatment. The aerobic treatment is accomplished by large oxygen transfer units suspended on the surface of basin waters. The prime objective of the project is to demonstrate a control method to optimize the quality of treatment to storm water and combined sewage mixed with industrial wastewater. (Project under construction.)

Muskegon, Michigan

This project will demonstrate the engineering feasibility of all major components of the proposed "Muskegon County Wastewater Treatment Irrigation System." Four major components are:

- Wastewater System Inputs
- Wastewater Transportation Systems
- Wastewater Treatment Systems
- Agricultural Wastewater Irrigation Systems

Kenosha, Wisconsin

The project objective is to provide a means for high rate biological treatment of combined sewage by the utilization of viable activated sludge, clarification, and disinfection. The methods will be to store sludge in a biosolids reservoir and maintain a contact tank and solids stabilization tank in an empty and ready condition at the sewage treatment plant.

Milwaukee, Wisconsin

The city project will demonstrate the effectiveness of a detention tank including chlorination facilities for the treatment of combined sewer overflows from a 570 acre area. The tank influent will be screened. The tank will provide a minimum of 15 minutes detention time for sedimentation and chlorination. After an overflow has occured the sludge deposits and remaining wastewater will be pumped to a nearby interceptor sewer for treatment at an existing treatment plant.

A Rex Chainbelt contract is demonstrating a system for the treatment of combined sewer overflows using techniques of screening and air floatation solids separation. This treatment demonstration utilizes a 5 mgd flow system.

An Allis Chalmers contract has been demonstrating a new concept of biological treatment in a sewer system. A series of rotating biological contactors are used to reduce BOD in sewage flows. A biological contactor is a rotating disk that has a biological growth all over it to digest organic wastes.

MR. STEIN: Thank you, Mr. Risley.

Are there any comments or questions?

Yes.

MR. MAYO: I would like to follow up just a moment on Mr. Risley's mention of a symposium. There will be some announcement fliers and registration slips for this symposium on storm and combined water overflows to be conducted in Chicago June 22 and 23 at the Pick Congress Hotel.

MR. STEIN: With that stimulating preview, I will bet they can't wait to get there. (Laughter.)

We will stand recessed for lunch and reconvene at 2 o'clock.

(Whereupon, at 12:25 o'clock, a luncheon recess was taken.)

AFTERNOON SESSION

Tuesday, March 31, 1970

(2 o'clock)

MR. STEIN: Let's reconvene.

Mr. Mayo.

MR. MAYO: The remaining portion of the report on research and development grants relating to the Milwaukee project special study will be given by Mr. Raymond Leary.

RAY D. LEARY

CHIEF ENGINEER & GENERAL MANAGER

MILWAUKEE METROPOLITAN SEWER COMMISSION

MILWAUKEE, WISCONSIN

MR. LEARY: Mr. Chairman, conferees, ladies and gentlemen.

My name is Ray Leary. I am Chief Engineer and General Manager of the Milwaukee Sewerage Commission. We have in the past three months conducted a research project, which I will read the results of the first 48 days of operation.

The Sewerage Commission of the city of Milwaukee, the A. O. Smith Corporation and the FWPCA have a joint demonstration project under way to demonstrate the removal of phosphorus from sewage utilizing the iron in waste pickle liquor from the sulfuric acid pickling of steel as the cation source. The project was proposed in late 1969 and placed on stream on January 5, 1970.

Waste pickle liquor is being added to the 115 million gallon per day East plant while the 85 million gallon per day West plant receives the same screened sewage and acts as the control.

Two 30,000 gallon waste pickle storage tanks have been installed and the instrumentation required to automatically provide constant iron addition to the mixed liquor is being installed by the A. O. Smith Corporation. The automatic system will monitor mixed liquor flow and waste pickle liquor iron concentration and adjust the waste pickle liquor flow to maintain the desired rate of iron addition.

The major objective of the iron addition to the East plant is to maintain an effluent total phosphorus concentration of 0.5 milligrams per liter (as P.) or less. Other objectives include:

A. A comparison of the efficiency of

the two plants in removing BOD, COD, nitrogen and suspended solids.

B. Determination of optimum iron requirement to maximize phosphorus removal.

C. Determination of the effects of iron addition on the mixed liquor biota and its settling characteristics.

D. Observation of possible effect of iron addition on the plant physical equipment.

E. Determine the effect of iron addition on waste sludge conditioning requirements.

At the present time the spent pickle liquor is being trucked from the A. O. Smith Corporation and added to the raw sewage at a rate that is manually operated and varied as to iron concentration and is determined by specific gravity. The iron is added 24 hours a day and 5 days a week.

During the first week of the project, January 5 through January 12, problems with waste pickle liquor handling were encountered due to cold weather and the subsequent crystallization of ferrous sulfate in trucks and feeding equipment.

R. D. Leary

The following total phosphorus data has been accumulated for the period from January 12, 1970, through February 28, 1970:

Total Phosphorus in mg/l-P

Screened Sewage	10.1
East Plant Effluent	0.77
West Plant Effluent	2.7
Percent Removal East Plant	92.4
Percent Removal West Plant	73.3

Iron Addition Data

Average lbs. iron/day = 11,004

Average iron concentration in mixed liquor due to addition in mg/l = 12.5

The range of total phosphorus concentration in the East Plant effluent was 0.35 to 1.9 milligrams per liter (as P.) with the high value occurring on a Sunday and Monday. No iron is added on Saturdays and Sundays because we don't have the automatic equipment in operation. Of the 48 days in the period, 15 days in their East Plant, where sulfuric sulfate was added, had a residue of 0.50 milligrams per liter (as P.) or less.

In closing I would like to point out the substantial contributions of the A. O. Smith Corporation in both money and engineering studies.

Thank you very much.

MR. STEIN: Are there any comments or questions?

If not, thank you.

Mr. Mayo.

MR. MAYO: The next report will be that of the Federal installations' activities in the Lake Michigan Basin by Mr. Merrill Gamet of the Great Lakes Regional Office. There will be Federal installation representatives participating during the course of Mr. Gamet's presentation.

MR. STEIN: All during this presentation we have not had the reports before they started and we have had numerous complaints. Would it be possible for Mr. Gamet to hold up until we have them in front of us?

MR. GAMET: O. K.

MR. MAYO: Wait just a minute.

MR. STEIN: All right, Mr. Gamet.

MERRILL GAMET, CHIEF
FEDERAL ACTIVITIES COORDINATION
GREAT LAKES REGION, FWPCA
CHICAGO, ILLINOIS

MR. GAMET: Thank you.

My name is Merrill Gamet. I am Chief of the Federal Activities Coordination branch, FWPCA, Great Lakes Regional Office.

The following is a summary of waste treatment and disposal at Federal installations with surface water discharges in the Lake Michigan Basin. More detailed information than is given in this summary is included in the status report which has been distributed to the conferees.

I would like to indicate the accomplishments that have been made toward the abatement of pollution at Federal installations in the Lake Michigan Basin, beginning with the U. S. Coast Guard.

1. The Indiana Harbor Light Station and the Charlevoix, Michigan, Light Station have secondary package treatment plants plus chlorination in operation

and are considered to be in compliance.

MR. STEIN: Do they remove phosphates?

MR. GAMET: Pardon?

MR. STEIN: Do these package plants remove phosphates?

MR. GAMET: Not as far as I know, other than in the--.

MR. STEIN: In other words, we don't remove phosphates in the Federal installations, but put the additional burden on the States to get up to the 80 percent with theirs?

MR. GAMET: I think the answer to that is in regard to the magnitude of the discharges treated, where there are a matter of five to ten people maximum contributing to these treatment facilities.

2. The Ninth Coast Guard District has reported that they are awaiting action by higher authority regarding a proposed connection from the Racine, Wisconsin, Coast Guard Station to the municipal sewer system. No definitive schedule has been announced, but the Coast Guard is cognizant of the requirements of Executive Order 11507.

3. Six Light Stations--

MR. STEIN: Just a minute. What does the Ninth Racine Coast Guard Station do? Do they discharge their waste raw now?

MR. GAMET: They discharge it raw.

MR. STEIN: Thank you.

MR. GAMET: Six Light Stations in Michigan and three Light Stations in Wisconsin will be unmanned and automated. Projected completion dates range from 1971 to December 1972. No interim plans are being made at this time to provide treatment or holding facilities.

MR. STEIN: Just a moment again, Mr. Gamet. At the present time these stations are manned, is that correct?

MR. GAMET: These are manned stations, yes, sir.

MR. STEIN: What do they do with the waste now, discharge raw?

MR. GAMET: Yes, sir.

MR. STEIN: All right.

MR. GAMET: 4. Coast Guard Buoy Tenders SUNDEW, at Charlevoix, Michigan, and MESQUITE, at Sturgeon Bay, Wisconsin, have waste holding tanks with dockside connections to evacuate wastes to municipal sewers, and are considered in compliance.

5. The Buoy Tender, WOODBINE, at Grand Haven, Michigan, has no waste treatment or holding tank facilities installed. Funds have been requested to install secondary treatment with arrangements for effluent discharge ashore. Project is to be completed by December 1972.

MR. STEIN: How many men in this complement, Mr. Gamet?

MR. GAMET: The WOODBINE, I believe, has a maximum complement of some 40. I am not positive of this number.

MR. STEIN: Forty people discharging wastes raw into the waters of Grand Haven, Michigan, is this correct?

MR. GAMET: That is right.

MR. STEIN: Thank you.

MR..GAMET: 6. The Coast Guard Tugs ARUNDEL, at Chicago, Illinois, and RARITAN, at Milwaukee, Wisconsin, are equipped with macerator-chlorinators, which are not considered to provide adequate treatment. Funds have been requested to install pumping equipment to discharge wastes to dockside facilities. Projects are to be completed by December 1972.

MR. STEIN: Are the macerator-chlorinators working?

MR. GAMET: They are working, yes, sir.

MR. STEIN: All right.

MR. GAMET: 7. There are nine 44-foot lifeboats operating from Coast Guard stations in Lake Michigan with a minimum of three station personnel. These vessels have macerator-chlorinators installed, which are not considered adequate. That is, they are operative, but not considered adequate treatment. No future plans are being considered at present.

8. The Coast Guard has a number of 30- and 36-foot boats that normally have no waste facilities, unless they are anticipating more than two or three hours duty away from their base. Portable holding tanks are used for longer periods of time.

MR. STEIN: Do you consider this satisfactory?

MR. GAMET: I wouldn't consider it satisfactory. All you can say, it is better than no holding tanks at all, but they do use these portable tanks if the period is long enough to warrant. This is the best information that we have been able to obtain from the Coast Guard within the last two or three weeks.

MR. STEIN: I don't understand this number 8. If they use a portable holding tank sometimes,why can't they use it all the time?

MR. GAMET: I presume they should. This is the information that the Coast Guard has provided to us.

MR. STEIN: I understand that. But this is your report, Mr. Gamet.

MR. GAMET: Yes, sir.

MR. STEIN: The notion is if they have a 30- to 36-foot boat and they claim they put a portable holding tank in it when they go out for more than two or three hours, what earthly reason is there for not having the holding tank on there all the time when they go out for less?

MR. GAMET: All I can presume is that they assume that no facilities are necessary for the short periods of time. This is a little bit ridiculous, I admit.

MR. STEIN: All right.

MR. GAMET: U. S. Army.

1. Connections were completed in September 1969 at Fort Sheridan to divert the boiler blowdown and laundry regeneration wastes to the sanitary sewer system, thereby eliminating the discharge of these wastes to Lake Michigan.

2. Negotiations are in progress with the North Shore Sanitary District to connect the sanitary and water treatment plant wastes into the District system for treatment and diversion out of Lake Michigan. The target date for project completion is December 1972. There is a representative from Fifth Army Headquarters present and I would like to call on him at this time to present a more detailed statement regarding this project.

(The following tables were submitted for the record by Mr. Gamet:)

SURFACE WATER DISCHARGES

from

FEDERAL INSTALLATIONS

in the LAKE MICHIGAN BASIN

MARCH 1970

Legend: S - Secondary Waste Discharges
I - Industrial Waste Discharges
including filter backwash,
boiler blowdown, etc.
P - Persons

March 1970

SURFACE WATER DISCHARGES

FROM FEDERAL INSTALLATIONS IN THE LAKE MICHIGAN BASIN

Installation (Agency & Location)	Waste Type & Volume 1000 GPD	Receiving Stream	Present Treatment	Improvement Needs	Proposed Program for Remedial Facilities	Timetable for Accomplishment (Completion Dates)
ILLINOIS						
U.S.Navy, Great Lakes Naval Training Center Great Lakes (Lake Co.)	S 4,200	L.Michigan	Secondary, chlorination BOD removal 90% SS removal 90%	1) Additional settling capacity, plant control equipment, filter improvement, sludge handling system, modifications	1) & 3) Construction of treatment facilities for water treatment plant wastes and heating plant boiler blowdown scheduled for F.Y. 1971.	Negotiations are underway to discharg raw sanitary wastes out of the Lake Mich. Basin, to the new North Shore Sanitary District, Gurney tertiary treatment plant. Project completion by 1/71 for (1) and (3), & 12/72 for (2) of remedial facilities.
			BOD - 15 mg/1 SS - 29 mg/1 PO_4 - 30 mg/1	2) Nutrient Reduction.	2) Connect sewerage system to NSSD to provide advanced waste treatment and diversion of effluent out of Lake Michigan Basin.	
	I 400	L.Michigan	No treatment of water treatment plant wastes and boiler plant blowdown	3) Treatment in main waste treatment plant.		

SURFACE WATER DISCHARGES

FROM FEDERAL INSTALLATIONS IN THE LAKE MICHIGAN BASIN

Installation (Agency & Location)	Waste Type & Volume 1000 GPD	Receiving Stream	Present Treatment	Improvement Needs	Proposed Program for Remedial Facilities	Timetable for Accomplishment (Completion Dates)
ILLINOIS, Cont'd.						
U.S.Navy, Naval Reserve Training Center (Armory) Chicago (Cook Co.)	S 8.8	Chicago Harbor (Inner)	Primary (septic tank) chlorination.	Connection to municipal sewer.	Project to construct sewer to serve state-owned Armory, USS PARLE and waste collection from pleasure craft in Monroe Street Harbor has been discontinued. As part of this agreement, the Metropolitan Sanitary District was to construct the necessary facilities to divert the effluent from the above sources out of Lake Michigan. Construction Grants funds could not be provided to MSD. Consequently, the agreement has been terminated by the Navy. Further, the USS PARLE requirement is no longer necessary due to proposed deactivation of this vessel. The Navy has requested the State of Illinois to construct the necessary sewer to serve the Armory, the Navy to reimburse the State over a 5-year period.	The Sanitary Water Board has reported that they are not aware of any progress having been made by the State, except that the completion date must not be later than December 1972.

SURFACE WATER DISCHARGES

FROM FEDERAL INSTALLATIONS IN THE LAKE MICHIGAN BASIN

Installation (Agency & Location)	Waste Type & Volume 1000 GPD	Receiving Stream	Present Treatment	Improvement Needs	Proposed Program for Remedial Facilities	Timetable for Accomplishment (Completion Dates)
ILLINOIS, Cont'd.						
U.S.Army Hdq.Ft.Sheridan Ft.Sheridan (Lake Co.)	S 542	L.Michigan	Secondary, chlorination BOD - 20-30 mg/l SS - 25-35 mg/l P - 30 mg/l	1) Nutrient removal or connection to North Shore Sanitary District	1) Project to divert the raw sanitary wastes from the Base to the North Shore Sanitary District system.	Engaged an AE to develop the preliminary design to discharge the raw sanitary wastes out of the L.Michigan Basin to the NSSD interceptor for treatment. The required completion date for the necessary work is December 1972.
	I 48	L.Michigan	Water treatment plant waste water not treated. Boiler blowdown and laundry water softener regeneration wastes connected to sanitary sewer system.	2) Connect to sanitary sewer system. 3) None	2) Filter backwash and sedimentation basin sludge to be pumped into the sanitary sewer. 3) None	2) Completion expected by July 1970.
U.S.Coast Guard Tugboat ARUNDEL, Chicago (Cook Co.)	20 P	Operates in L.Michigan	Macerator-chlorinator	Secondary, chlorination	Pumping equipment to be installed to permit waste discharge to dockside facilities in homeport.	Funds have been requested, but no assurance has been given as to when they will be appropriated. Deadline for compliance is Dec. 31, 1972

SURFACE WATER DISCHARGES

FROM FEDERAL INSTALLATIONS IN THE LAKE MICHIGAN BASIN

Installation (Agency & Location)	Waste Type & Volume 1000 GPD	Receiving Stream	Present Treatment	Improvement Needs	Proposed Program for Remedial Facilities	Timetable for Accomplishment (Completion Dates)
INDIANA						
U.S. Coast Guard Indiana Harbor East Bkw. C.G.Sta. East Chicago (Lake County)	S 0.45	L.Mich.	Secondary, Chlorination BOD - 30 mg/l 95% reduction SS - 92% reduction Total P - 20 mg/l 65% reduction Sol. P - 13 mg/l 52% reduction	None	None	Operative
NIKE C.G. Site 32 Chesterton (Porter Co.)	S 7.1	Dunes Cr. to Little Calumet R.	Secondary, chlorination BOD - 90% reduction SS - P - ?	None	None	
NIKE C.G. Site 45 Gary (Lake Co.)	S 3.0	Ditch Trib. to Grand Calumet R.	Secondary, chlorination BOD - 90% reduction SS - P - ?	None	None	
NIKE C.G. Site 47 Wheeler (Porter Co.)	S 8.0	Ditch Trib. to Burns Ditch	Secondary, chlorination BOD - 90% reduction SS - P - ?	None	None	

SURFACE WATER DISCHARGES

FROM FEDERAL INSTALLATIONS IN THE LAKE MICHIGAN BASIN

Installation (Agency & Location)	Waste Type & Volume 1000 GPD	Receiving Stream	Present Treatment	Improvement Needs	Proposed Program for Remedial Facilities	Timetable for Accomplishment (Completion Dates)
MICHIGAN						
U.S. Air Force Empire Air Force Station (Leelanau Co.)	S 20.0	-	Septic tank - subsurface disposal field.	None. Original plans called for construction of new treatment facilities to provide secondary treatment and nutrient removal, for discharge to Lake Michigan. These facilities were necessary to replace the existing septic tank and drain field system. However, the tile field was rehabilitated in the interest of economy. The septic tank and drain field system is now operating satisfactorily. Tests have shown that there is no discharge to surface waters.	None	Operative
U.S. Coast Guard Charlevoix Station Charlevoix (Charlevoix Co.)	S 2.5	Pine River	Secondary, chlorination Effl. - D.O. 4.0 mg/l BOD - ? SS - ? P - ?	None other than improved plant operation and control. Difficulties are encountered with inadequately trained operators and plant operating at about 25% of design capacity. Facilities not available for BOD and P analyses.	Control analyses for the secondary treatment plant will be conducted by the Coast Guard.	Operative

SURFACE WATER DISCHARGES

FROM FEDERAL INSTALLATIONS IN THE LAKE MICHIGAN BASIN

Installation (Agency & Location)	Waste Type & Volume 1000 GPD	Receiving Stream	Present Treatment	Improvement Needs	Proposed Program for Remedial Facilities	Timetable for Accomplishment (Completion Dates)
MICHIGAN, Cont'd.						
Grays Reef Lt, Station Cross Village (Emmet Co.)	S 0.12	L.Michigan	None	Secondary, chlorination	Plans are to unman and automate the station.	Completion scheduled for the period 1971-Dec. 1972.
Lansing Shoal Lt.Station (Mackinac Co.)	S 0.12	L.Michigan	None	Secondary, chlorination	Coast Guard plans to unman and automate the station.	Scheduled for the period 1971-December 1972
Menominee Pierhead Lt.Station (Menominee Co.)	S 0.05	Green Bay	None	Secondary, chlorination	"	"
Minneapolis Shoal Lt.Station (Menominee Co.)	S 0.12	Green Bay	None	Secondary, chlorination	"	"
U.S.Coast Guard North Manitou Shoal Lt.Station (Leelanau Co.)	S 0.35	L.Michigan	None	Secondary, chlorination	"	"
White Shoal Lt. Station (Leelanau Co.)	S 0.12	L.Michigan	None	Secondary, chlorination	"	"
U.S.Coast Guard Cutter SUNDEW, Charlevoix Harbor (Charlevoix Co.)	47 P	Operates in L.Mich.	Holding tank	None		Holding tank with connection to Charlevoix city sewer installed in 1968. Operative and in compliance.

SURFACE WATER DISCHARGES

FROM FEDERAL INSTALLATIONS IN THE LAKE MICHIGAN BASIN

Installation (Agency & Location)	Waste Type & Volume 1000 GPD	Receiving Stream	Present Treatment	Improvement Needs	Proposed Program for Remedial Facilities	Timetable for Accomplishment (Completion Dates)
MICHIGAN, Cont'd.						
U.S.Coast Guard Cutter WOODBINE Grand Haven (Ottawa Co.)	47 P	Operates in L.Michigan	No treatment	Secondary, chlorination	Secondary treatment plus pumping arrangements for discharge of effluent ashore.	Funds have been requested, but no assurance has been given as to when they will be appropriated. Deadline for compliance is Dec. 31, 1972.
U.S.Dept. of Interior Bureau of Sport Fisheries & Wildlife Charlevoix National Fish Hatchery (Charlevoix Co.)	800.0	L.Michigan				Facility has been returned to the State for operation. No longer a Federal installation.
Jordan River Nat. Fish Hatchery Elmira, Mich.	5200 GPM 8900 GPD	Jordan R.	None - Total P .003 - .086 mg/1 NH_3 .01 - .20 $NO_2 + NO_3$ 0.50 - 2.8	Settling basin or lagoon to settle out solids.	Construction of settling basin or lagoon.	Preliminary plans for a proposed lagoon have been approved. Construction funds have been requested for FY 71. Completion is expected by fall of 1971.

SURFACE WATER DISCHARGES

FROM FEDERAL INSTALLATIONS IN THE LAKE MICHIGAN BASIN

Installation (Agency & Location)	Waste Type & Volume 1000 GPD	Receiving Stream	Present Treatment	Improvement Needs	Proposed Program for Remedial Facilities	Timetable for Accomplishment (Completion Dates)
WISCONSIN						
U.S. Coast Guard Racine C.G. Station Racine (Racine Co.)	S 1.0 S 0.3	Root R. " "	Primary (septic tank) None	Secondary, chlorination	Plans call for connection to the Racine municipal sewer system.	Completion scheduled for 1971-Dec.1972.
Green Bay Harbor Ent. Lt.Station Green Bay (Brown Co.)	S 0.12	Green Bay	None	Secondary, chlorination	Coast Guard plans to automate and unman station.	"
Kewaunee Pierhead Lt. Station Kewaunee (Kewaunee Co.)	S 0.09	L.Michigan	None	Secondary, chlorination	"	"
Manitowoc Breakwater Lt.Station Manitowoc (Manitowoc Co.)	S 0.05	L.Michigan	None	Secondary, chlorination	Coast Guard plans to unman and automate the Station.	Completion date scheduled for 1971-December 1972.
U.S.Coast Guard Tug Boat RARITAN, Milwaukee (Waukesha Co.)	20 P	Operates in Lake Mich.	Macerator-chlorinator	Secondary, chlorination	Pumping equipment to be installed to permit waste discharge to dockside facilities in home port.	Funds have been requested, but no assurance has been given as to when they will be appropriated. Deadline for compliance is Dec. 31, 1972.
U.S.Coast Guard Cutter MESQUITE Sturgeon Bay (Door Co.)	47	Operates in L.Michigan	Holding tank and pump-out facilities to Sturgeon Bay municipal sewer system.	None	None	Now operative & in compliance.

MR. GAMET: I would like to call on Mr. Robert Scheible.

ROBERT E. SCHEIBLE
CHIEF SANITARY ENGINEER
HEADQUARTERS, FIFTH U.S. ARMY
FORT SHERIDAN, ILLINOIS

MR. SCHEIBLE: Conferees of the Conference in the Matter of Pollution of Lake Michigan and its Tributary Basin, Wisconsin, Illinois, Indiana and Michigan.

I am Mr. Robert E. Scheible, Chief Sanitary Engineer, Headquarters, Fifth U. S. Army. My purpose in being here today is to provide a status report on Fifth U. S. Army pollution control projects of interest to this conference, as requested by Mr. Francis T. Mayo, Regional Director, Federal Water Pollution Control Administration.

At the last meeting of this conference, February 25, 1969, Fifth U. S. Army reported that Fort Sheridan would comply with the recommendations of this conference by eliminating domestic waste discharges from Fort Sheridan into Lake Michigan.

Elimination of these discharges requires a connection to the North Shore Sanitary District, which in turn requires approximately two miles of sewer and involves a cost that requires congressional funding. The request for necessary funds is included in the Department of Defense Fiscal Year 1971 Military Construction Program. This program has been submitted to the Congress and is presently under review by the various subcommittees of Congress involved in these appropriations.

Since the project is a firm requirement in the fiscal year 1971 program, the Chief of Engineers has directed the Chicago District Engineer to begin preliminary design. The consulting engineering firm of Consoer-Townsend and Associates has been selected for this purpose. If no abnormal problems arise during preliminary design, and if congressional funding is received in the early part of the fiscal year, as is the normal situation, the final plans and specifications should be ready by January 1971 and a contract awarded in March 1971.

If these mileposts are met, the completed project should be ready for use by January 1973. The North Shore Sanitary District has agreed to accept the discharge from Fort Sheridan and tentative agreement has been reached on connection charges, annual costs, and other conditions. Final agreements cannot be negotiated until Congress has formally approved the project, thus permitting the Chicago District Engineer to obligate the Department of the Army.

It is our understanding, however, that the North Shore Sanitary District will only permit a connection to its facilities if its program for enlargement is also completed. We understand that North Shore Sanitary District has been allocated funds for this purpose but we have no assurance that their work will be completed by the time our connecting sewer is ready for use. Compliance with the December 31, 1972, deadline thus depends partly on the activities of others that are beyond our control.

This project also includes elimination of the discharge of the Fort Sheridan Water Treatment Plant backwash water to Lake Michigan. Backwash water will be connected to the post sewer system and discharged to the North Shore Sanitary District. Headquarters Fifth U. S. Army recognizes that the conferees' recommendation on this problem called for elimination by July 1, 1970. However, congressional funding methods necessitated combining the requirements into one project for presentation and approval.

We would like the record to show that the Fort Sheridan sewage treatment plant is presently meeting all treatment standards for discharge into Lake Michigan. This, in fact, has been verified in a letter to Colonel Warner--incidentally, this is the Army Engineer for Fifth U. S. Army Headquarters--from Mr. C. W. Klassen, Technical Secretary, Illinois Sanitary Water Board. Mr. Klassen stated in part:

> "It has been our understanding that domestic sewage treatment at Fort Sheridan has been in accord with accepted practices and Illinois regulations."

The Fort Sheridan sewage treatment plant continues to produce an effluent which has at least 90 percent of the biochemical oxygen demand and suspended solids removed and in addition maintains a minimum of 1 milligram per liter chlorine residual. Most of the time, the effluent is sterile as regards fecal coliform and fecal streptococci. The treated sewage discharged from Fort

Sheridan represents approximately 1/2 of 1 percent of the total residual pollution load on Lake Michigan from the Illinois North Shore communities.

It is thus apparent that Fort Sheridan's principal failing is the fact that it does not presently meet the December 1972 standards for nutrient reduction. Mr. Klassen's letter indicated that facilities complying with present standards but not complying with new standards would be labeled "a polluter" until the discharge was brought into compliance. While there may be some slight psychological advantage to such an approach, it fails to give any recognition to the unsurpassed record of Fort Sheridan in the quality of its sewage treatment facility, a condition which has prevailed for decades, or to its program for meeting future standards. The net result of this policy has made Fort Sheridan, as a Federal agency, the natural target of most of the adverse publicity while our neighbors, north and south, continue to discharge sewage that has not even been given secondary treatment before discharge into Lake Michigan.

In short, gentlemen, this policy has resulted in 95 percent of the adverse publicity being directed at 1/2 of 1 percent of the problem.

Thank you.

MR. STEIN: Thank you, Mr. Scheible.

How much is it going to cost you for your Fort Sheridan improvements?

MR. SCHEIBLE: The programmed amount is two million four hundred eighty-eight.

MR. STEIN: You are going to spend two million--how much?

MR. SCHEIBLE: Two million four hundred eighty-eight thousand dollars.

MR. STEIN: About $2-1/2 million.

MR. SCHEIBLE: Yes, sir.

MR. STEIN: And you are going to spend all that money when you have an unsurpassed record at Fort Sheridan for the quality of its sewage treatment facility?

MR. SCHEIBLE: The sewage treatment plant, as I indicated, would not meet the December 1972 standards for nutrient reduction.

MR. STEIN: Do you know what the problem is that we are having with Lake Michigan on eutrophication?

MR. SCHEIBLE: Yes, sir.

MR. STEIN: What is causing that, have the scientists said?

MR. SCHEIBLE: I am sorry, sir.

MR. STEIN: Do you know what is causing that eutrophication?

MR. SCHEIBLE: I don't think we are disputing the problem, sir.

MR. STEIN: No. But the point is, you talk down Fort Sheridan's principal failing, which is the fact that it does not presently meet the standards for nutrient removal. Nutrients is precisely what is causing the eutrophication of the lakes. In other words, you are doing fine except for removing the element that is causing the eutrophication of the lake, and I don't think we can fall back on Mr. Gamet's proposition that you have got four or five people in Fort Sheridan.

The difficulty that I find with this, if you are doing so well, why do we have to spend $2-1/2 million of the taxpayers' money?

MR. SCHEIBLE: I think, sir, that I said that we are meeting all current standards and we have been for many years. There are new standards going into effect December 1972. We do not presently meet those standards, but we do have a program that will cause us to meet those standards.

MR. STEIN: Do the current standards include meeting the phosphate removal?

MR. SCHEIBLE: My understanding is that there are no current standards for phosphate removal. The standards for phosphate reduction go into effect on 1 January 1973.

MR. STEIN: And that means they are not current?

MR. SCHEIBLE: To my understanding they would become current on 1 January 1973.

MR. STEIN: That is an interesting way of putting it. I thought they were current from the time we put them into effect.

The prose is very good, but the indication is that Fort Sheridan is putting in pollutants. The President recognized that in his recent message when he asked that the nutrients would be taken out. I would hesitate to say we were doing such a bangup job of pollution control. Why ask the taxpayers to put in $2-1/2 million to improve that if we were doing such a wonderful job at the present time?

Do you have any comment?

MR. SCHEIBLE: No, sir. I think the statement speaks for itself.

MR. STEIN: So do I.

Thank you very much.

Are there any other comments or questions?

MR. PURDY: Mr. Chairman, I find this statement interesting. I feel like I am almost back home at my own commission meetings where small municipalities come in and say, "If you give us a grant and if we can find the rest of the money, we would be happy to do it. We have been doing fine over the past 10 years. Why are you picking on us now?"

It seems like the same sort of statement that we receive from municipalities. I find it interesting from the Federal Government.

MR. STEIN: You know, Mr. Purdy, I have worked with you through the years and have worked with your predecessor through the years and your predecessor's predecessor through the years (laughter), and I think we have all arrived at one judgment, that wherever he is, either an industry or municipality or Federal Government or State government, a polluter is a polluter.

MR. PURDY: The same response.

MR. STEIN: Yes, that is right.

It is our understanding that the North Shore Sanitary District will only permit a connection to its facilities if its program for enlargement is also completed. In other words, what we have here is an arrangement with a municipality or a sanitary district and if they don't do it, what do you want from us. And this is great, and we have no more responsibility.

I think both in the State and the Federal Government you recognize that each entity has the responsibility for removing its wastes at the source and we wish you well to join up with a public body, but if you can't join up with a public body that doesn't excuse you from removing the waste at its source. And the notion that you are having difficulty with them does not absolve you from your legal and technical responsibility of cleaning up the waters.

Any other questions or comments?

MR. KLASSEN: One correction, Mr. Chairman.

On page 2 of the large tabulation, at the time this was prepared it was correct. I am referring to the U. S. Naval Armory timetable for accomplishment, "The Sanitary Water Board has reported that they are not aware of any progress." At that time this was correct.

I think it is indeed premature, but in our Governor's budget message to our Legislature tomorrow there is a sum of money in the budget that will take care of the connection from the Naval Armory to the sewer system of the city of Chicago. I want to correct that.

MR. STEIN: Is there any problem with that correction?

MR. GAMET: I would like to make one comment. This is a little bit previous as far as my report is concerned, but now that Mr. Klassen has brought it up, I talked to Mr. Klassen on the phone one day last week. He happened to be in Chicago and started to give me some information and then wanted to talk to his office, but he did not call back. So I called his Springfield office and this was the information that I got from his office, so that is the latest information that we have.

MR. KLASSEN: That is correct, because we were instructed not to divulge any items in the budget until it was given and I am violating this by one day.

MR. GAMET: Well, I appreciate getting the information.

MR. STEIN: All right, Mr. Gamet.

MR. GAMET: One more item regarding the Army.

The three NIKE sites, numbers 32, 45 and 47, located in Porter and Lake Counties, Indiana, have secondary treatment plus chlorination and are obtaining about 90 percent BOD reduction. No plans have been reported to us regarding any proposed nutrient removal facilities.

The U. S. Navy:

1. Approval was granted to the Great Lakes Naval Training Center in January 1970 to proceed with negotiations with the North Shore Sanitary District to discharge wastes to the NSSD system for treatment and diversion out of the Lake Michigan Basin. The projected completion date of this project is December 1972 or earlier.

There is a representative from the Ninth Naval District here and I would like to call on Lieutenant Commander Richard Knopf to make a short presentation regarding this project.

MR. STEIN: Do you have copies?

LT. COMMANDER KNOPF: I don't have adequate copies.

MR. STEIN: Thank you.

LT. COMMANDER RICHARD KNOPF
MANAGEMENT DEPARTMENT
NAVAL FACILITIES ENGINEERING COMMAND

LT. COMMANDER KNOPF: Chairman Stein, conferees, ladies and gentlemen.

Commander Stroh, the commanding officer of the Midwest Division of the Naval Facilities Engineering Command, intended to be here today to make this presentation but he was called away on an emergency, so I will read the statement for the Navy.

I am Lt. Commander Knopf, head of the Management Department at the Midwest Division of the Naval Facilities Engineering Command, and environmental matters is one of the areas of responsibilities in my department.

Effluents now discharged into Lake Michigan from the Great Lakes Naval Base come from three sources. Plans are under way to divert all three effluents from Lake Michigan prior to December 1972 to assure compliance with the four-State conference standards and Presidential Executive Order 11507.

The major effluent is from the Great Lakes main sewage treatment plant. This effluent receives secondary treatment and chlorination, and complies with all current standards. Diversion of this effluent from Lake Michigan by 1972 will be accomplished by joining the regional sewage collection and treatment system of the North Shore Sanitary District. An appropriate military construction project has been prepared and is currently being presented to Congress for inclusion in the fiscal year 1971 military construction program. This project provides for a connection charge to be paid to the North Shore Sanitary District and for necessary on-base construction. The Navy is presently negotiating with the North Shore Sanitary District for this connection. The Navy has also made a formal request to the Illinois State Water Board for the diversion of Lake Michigan water which will be necessitated by joining the North Shore Sanitary District.

R. Knopf

A second effluent discharged into Lake Michigan is the filter backwash water from the Great Lakes main water treatment plant. Although plans to resolve this problem are included in the project for joining the North Shore Sanitary District, the Navy is taking interim measures to eliminate the discharge of objectionable material from Lake Michigan this summer by constructing a settling basin, the concept for which has been approved by the Illinois State Water Board and the Federal Water Pollution Control Administration. Construction is planned to be completed by the fall of 1970.

The third discharge is the boiler blowdown waste from the Great Lakes main boiler plant. This waste will also be collected in the settling basin previously mentioned as an interim measure and will eventually be diverted to the North Shore Sanitary District system prior to December 1972.

It was recently announced that the Naval vessels stationed on Lake Michigan are being transferred. The four ships which now operate on Lake Michigan will be transferred from Lake Michigan prior to 30 June 1970 precluding possible future pollution by U. S. Naval vessels.

In summary, the Navy is sensitive to the importance of protecting Lake Michigan and has and will continue to cooperate with all Federal, State and local agencies in pursuit of this goal. The Navy plans to have no discharges going into Lake Michigan after December 1972. The following specific actions toward this end have been taken:

(1) A program has been presented to Congress to permit joining the North Shore Sanitary District.

(2) Negotiation with the North Shore Sanitary District is taking place.

(3) A request for diversion of Lake Michigan water has been requested from Illinois State Water Board.

(4) A settling basin will be constructed as an interim measure which will collect water plant filter backwash water and boiler blowdown wastes in a manner acceptable to the Illinois State Water Board and the FWPCA.

(5) All U. S. Naval vessels now operating on Lake Michigan are being transferred from the lake.

MR. STEIN: Thank you.

How much money is this going to cost?

LT. COMMANDER KNOPF: It is pretty difficult to talk in precise dollars because the price tag will be determined, I think, by the negotiations with the North Shore Sanitary District. We are talking in excess of $10 million.

MR. STEIN: Right. You know, I don't want to push you to it because the commanding officer isn't here, but during World War II when they used to have ribbon clerks like us fighting the war we always eschewed the self-serving statement. I know the President has put this $10 million in his budget or in the announcement of cleaning up Federal installations, particularly with respect to the Great Lakes Naval Training Center and Fort Sheridan. These were the two that he indicated were important in the cleaning up of Lake Michigan.

But, again, it rings just a little hollow to say you are meeting all current requirements and, at the same time, you are going to have to spend $10 million. I think I was active in Washington trying to get this put in.

By the way, I am not asking for any response from you unless you want to make it.

But the point is, we did have requirements. The current requirements are that the nutrients and phosphates be removed. We do have a time schedule. Unless you can put it up you are not going to meet it.

The point is, I hope that the Army and the Navy will get as sophisticated as our municipalities and industries and will not say they are going to spend millions of dollars while they are still meeting current requirements. It seems to me there is a slight contradiction in that.

Any other comments or questions?

If not, thank you very much.

LT. COMMANDER KNOPF: Yes, sir.

MR. GAMET: The next item in my report that refers to the naval training vessel S.S. PARLE I believe should be omitted at this time in light of the statement which the Lt. Commander just made regarding all naval vessels in Lake Michigan.

Item 3. The Navy, by letter dated March 3, 1970, to the Metropolitan Sanitary District, terminated the sewer service contract for which funds had been approved to participate in the cost of construction of a sewer to serve the Naval Training Armory and the USS PARLE in Chicago Harbor. The State of Illinois has been requested to seek approval for this installation, with the Navy sharing in the cost to be paid over a five-year period.

I read that much of that statement as background for the statement which Mr. Klassen made a few moments ago.

U. S. Air Force. A reevaluation of existing waste treatment facilities at Empire Air Force Station, Empire, Michigan, was made during an on-site investigation in June 1969 by representatives of the Air Force, State of Michigan and FWPCA. In view of the recent rehabilitation of the subsurface disposal system, it was determined that the facilities are operating satisfactorily and that there is no surface water discharge. The previously proposed package treatment plant was therefore deleted from the Air Force construction program.

U. S. Department of the Interior.

1. The Bureau of Sports Fisheries and Wildlife, Charlevoix National Fish Hatchery, has been returned to the State of Michigan for operation. It is, therefore, no longer a Federal installation.

MR. MAYO: Merrill, what was the nature of the problem at the hatchery?

MR. GAMET: It was simply the flow-through waters of the hatchery itself and a similar situation to that at the Jordan River National Fish Hatchery. Although no action had been taken, I report this simply to delete that installation from the Federal installations in the Lake Michigan Basin.

The Jordan River National Fish Hatchery, Elmira, Michigan. Preliminary plans have been completed for a settling basin or lagoon for treatment of fish hatchery waste discharges.

This was necessitated by complaints that were made by private citizens and the State and this project has then been proposed and is under way. The projected completion date is fiscal year 1971.

I have a short statement on operating reports. Many of you will recall that there has been difficulty again obtaining operating reports on the part of the States from Department of Defense installations.

Information has been received that the Department of Defense is revising their regulations, such as Army Regulation 420-46, and Air Force Regulation 91-9, Paragraph 10d, pertaining to the submission of waste treatment plant operating reports to other Federal and State agencies. Information pertaining to these revisions will be forwarded to the States as soon as it is available.

I would like to add also on the last page, interim compliance date.

Executive Order 11507 requires that all Federal agencies submit agency plans to the Director of the Bureau of the Budget by June 30, 1970, to provide for such improvements as may be necessary to meet the December 31, 1972, deadline for pollution abatement.

I would like to add further that I have distributed copies to the conferees of Executive Order 11507 and Executive Order 11514, the titles of which are, respectively, "Prevention, Control, and Abatement of Air and Water Pollution at Federal Facilities" and "Protection and Enhancement of Environmental Quality."

(Which said orders are as follows:)

Executive Order 11507

PREVENTION, CONTROL, AND ABATEMENT OF AIR AND WATER POLLUTION AT FEDERAL FACILITIES

By virtue of the authority vested in me as President of the United States and in furtherance of the purpose and policy of the Clean Air Act, as amended (42 U.S.C. 1857), the Federal Water Pollution Control Act, as amended (33 U.S.C. 466), and the National Environmental Policy Act of 1969 (Public Law No. 91-190, approved January 1, 1970), it is ordered as follows:

SECTION 1. *Policy.* It is the intent of this order that the Federal Government in the design, operation, and maintenance of its facilities shall provide leadership in the nationwide effort to protect and enhance the quality of our air and water resources.

SEC. 2. *Definitions.* As used in this order:

(a) The term "respective Secretary" shall mean the Secretary of Health, Education, and Welfare in matters pertaining to air pollution control and the Secretary of the Interior in matters pertaining to water pollution control.

(b) The term "agencies" shall mean the departments, agencies, and establishments of the executive branch.

(c) The term "facilities" shall mean the buildings, installations, structures, public works, equipment, aircraft, vessels, and other vehicles and property, owned by or constructed or manufactured for the purpose of leasing to the Federal Government.

(d) The term "air and water quality standards" shall mean respectively the quality standards and related plans of implementation, including emission standards, adopted pursuant to the Clean Air Act, as amended, and the Federal Water Pollution Control Act, as amended, or as prescribed pursuant to section 4(b) of this order.

(e) The term "performance specifications" shall mean permissible limits of emissions, discharges, or other values applicable to a particular Federal facility that would, as a minimum, provide for conformance with air and water quality standards as defined herein.

(f) The term "United States" shall mean the fifty States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, and Guam.

SEC. 3. *Responsibilities.* (a) Heads of agencies shall, with regard to all facilities under their jurisdiction:

(1) Maintain review and surveillance to ensure that the standards set forth in section 4 of this order are met on a continuing basis.

(2) Direct particular attention to identifying potential air and water quality problems associated with the use and production of new materials and make provisions for their prevention and control.

(3) Consult with the respective Secretary concerning the best techniques and methods available for the protection and enhancement of air and water quality.

(4) Develop and publish procedures, within six months of the date of this order, to ensure that the facilities under their jurisdiction are in conformity with this order. In the preparation of such procedures there shall be timely and appropriate consultation with the respective Secretary.

(b) The respective Secretary shall provide leadership in implementing this order, including the provision of technical advice and assistance to the heads of agencies in connection with their duties and responsibilities under this order.

(c) The Council on Environmental Quality shall maintain continuing review of the implementation of this order and shall, from time to time, report to the President thereon.

Sec. 4. *Standards.* (a) Heads of agencies shall ensure that all facilities under their jurisdiction are designed, operated, and maintained so as to meet the following requirements:

(1) Facilities shall conform to air and water quality standards as defined in section 2(d) of this order. In those cases where no such air or water quality standards are in force for a particular geographical area, Federal facilities in that area shall conform to the standards established pursuant to subsection (b) of this section. Federal facilities shall also conform to the performance specifications provided for in this order.

(2) Actions shall be taken to avoid or minimize wastes created through the complete cycle of operations of each facility.

(3) The use of municipal or regional waste collection or disposal systems shall be the preferred method of disposal of wastes from Federal facilities. Whenever use of such a system is not feasible or appropriate, the heads of agencies concerned shall take necessary measures for the satisfactory disposal of such wastes, including:

(A) When appropriate, the installation and operation of their own waste treatment and disposal facilities in a manner consistent with this section.

(B) The provision of trained manpower, laboratory and other supporting facilities as appropriate to meet the requirements of this section.

(C) The establishment of requirements that operators of Federal pollution control facilities meet levels of proficiency consistent with the operator certification requirements of the State in which the facility is located. In the absence of such State requirements the respective Secretary may issue guidelines, pertaining to operator qualifications and performance, for the use of heads of agencies.

(4) The use, storage, and handling of all materials, including but not limited to, solid fuels, ashes, petroleum products, and other chemical and biological agents, shall be carried out so as to avoid or minimize the possibilities for water and air pollution. When appropriate, preventive measure shall be taken to entrap spillage or discharge or otherwise to prevent accidental pollution. Each agency, in consultation with the respective Secretary, shall establish appropriate emergency plans and procedures for dealing with accidental pollution.

(5) No waste shall be disposed of or discharged in such a manner as could result in the pollution of ground water which would endanger the health or welfare of the public.

(6) Discharges of radioactivity shall be in accordance with the applicable rules, regulations, or requirements of the Atomic Energy Commission and with the policies and guidance of the Federal Radiation Council as published in the Federal Register.

(b) In those cases where there are no air or water quality standards as defined in section 2(d) of this order in force for a particular geographic area or in those cases where more stringent requirements are deemed advisable for Federal facilities, the respective Secretary, in consultation with appropriate Federal, State, interstate, and local agencies, may issue regulations establishing air or water quality standards for the purpose of this order, including related schedules for implementation.

(c) The heads of agencies, in consultation with the respective Secretary, may from time to time identify facilities or uses thereof which are to be exempted, including temporary relief, from provisions of this order in the interest of national security or in extraordinary cases where it is in the national interest. Such exemptions shall be reviewed periodically by the respective Secretary and the heads of the agencies concerned. A report on exemptions granted shall be submitted to the Council on Environmental Quality periodically.

SEC. 5. *Procedures for abatement of air and water pollution at existing Federal facilities.* (a) Actions necessary to meet the requirements of subsections (a)(1) and (b) of section 4 of this order pertaining to air and water pollution at existing facilities are to be completed or under way no later than December 31, 1972. In cases where an enforcement conference called pursuant to law or air and water quality standards require earlier actions, the earlier date shall be applicable.

(b) In order to ensure full compliance with the requirements of section 5(a) and to facilitate budgeting for necessary corrective and preventive measures, heads of agencies shall present to the Director of the Bureau of the Budget by June 30, 1970, a plan to provide for such improvements as may be necessary to meet the required date. Subsequent revisions needed to keep any such plan up-to-date shall be promptly submitted to the Director of the Bureau of the Budget.

(c) Heads of agencies shall notify the respective Secretary as to the performance specifications proposed for each facility to meet the requirements of subsections 4 (a) (1) and (b) of this order. Where the respective Secretary finds that such performance specifications are not adequate to meet such requirements, he shall consult with the agency head and the latter shall thereupon develop adequate performance specifications.

(d) As may be found necessary, heads of agencies may submit requests to the Director of the Bureau of the Budget for extensions of time for a project beyond the time specified in section 5(a). The Director, in consultation with the respective Secretary, may approve such requests if the Director deems that such project is not technically feasible or immediately necessary to meet the requirements of subsections 4 (a) and (b). Full justification as to the extraordinary circumstances necessitating any such extension shall be required.

(e) Heads of agencies shall not use for any other purpose any of the amounts appropriated and apportioned for corrective and preventive measures necessary to meet the requirements of subsection (a) for the fiscal year ending June 30, 1971, and for any subsequent fiscal year.

SEC. 6. *Procedures for new Federal facilities.* (a) Heads of agencies shall ensure that the requirements of section 4 of this order are considered at the earliest possible stage of planning for new facilities.

(b) A request for funds to defray the cost of designing and constructing new facilities in the United States shall be included in the annual budget estimates of an agency only if such request includes funds to defray the costs of such measures as may be necessary to assure that the new facility will meet the requirements of section 4 of this order.

(c) Heads of agencies shall notify the respective Secretary as to the performance specifications proposed for each facility when action is necessary to meet the requirements of subsections 4(a) (1) and (b) of this order. Where the respective Secretary finds that such performance specifications are not adequate to meet such requirements he shall consult with the agency head and the latter shall thereupon develop adequate performance specifications.

(d) Heads of agencies shall give due consideration to the quality of air and water resources when facilities are constructed or operated outside the United States.

SEC. 7. *Procedures for Federal water resources projects.* (a) All water resources projects of the Departments of Agriculture, the Interior, and the Army, the Tennessee Valley Authority, and the United States Section of the International Boundary and Water Commission shall be consistent with the requirements of section 4 of this order. In addition, all such projects shall be presented for the consideration of the Secretary of the Interior at the earliest feasible stage if they involve proposals or recommendations with respect to the authorization or construction of any Federal water resources project in the United States. The Secretary of the Interior shall review plans and supporting data for all such projects relating to water quality, and shall prepare a report to the head of the responsible agency describing the potential impact of the project on water quality, including recommendations concerning any changes or other measures with respect thereto which he considers to be necessary in connection with the design, construction, and operation of the project.

(b) The report of the Secretary of the Interior shall accompany at the earliest practicable stage any report proposing authorization or construction, or a request for funding, of such a water resource project. In any case in which the Secretary of the Interior fails to submit a report within 90 days after receipt of project plans, the head of the agency concerned may propose authorization, construction, or funding of the project without such an accompanying report. In such a case, the head of the agency concerned shall explicitly state in his request or report concerning the project that the Secretary of the Interior has not reported on the potential impact of the project on water quality.

SEC. 8. *Saving provisions.* Except to the extent that they are inconsistent with this order, all outstanding rules, regulations, orders, delegations, or other forms of administrative action issued, made, or otherwise taken under the orders superseded by section 9 hereof or relating to the subject of this order shall remain in full force and effect until amended, modified, or terminated by proper authority.

SEC. 9. *Orders superseded.* Executive Order No. 11282 of May 26, 1966, and Executive Order No. 11288 of July 2, 1966, are hereby superseded.

Richard Nixon

THE WHITE HOUSE,
February 4, 1970.

[F.R. Doc. 70-1566; Filed, Feb. 4, 1970; 12:33 p.m.]

Executive Order 11514

PROTECTION AND ENHANCEMENT OF ENVIRONMENTAL QUALITY

By virtue of the authority vested in me as President of the United States and in furtherance of the purpose and policy of the National Environmental Policy Act of 1969 (Public Law No. 91-190, approved January 1, 1970), it is ordered as follows:

SECTION 1. *Policy.* The Federal Government shall provide leadership in protecting and enhancing the quality of the Nation's environment to sustain and enrich human life. Federal agencies shall initiate measures needed to direct their policies, plans and programs so as to meet national environmental goals. The Council on Environmental Quality, through the Chairman, shall advise and assist the President in leading this national effort.

SEC. 2. *Responsibilities of Federal agencies.* Consonant with Title I of the National Environmental Policy Act of 1969, hereafter referred to as the "Act", the heads of Federal agencies shall:

(a) Monitor, evaluate, and control on a continuing basis their agencies' activities so as to protect and enhance the quality of the environment. Such activities shall include those directed to controlling pollution and enhancing the environment and those designed to accomplish other program objectives which may affect the quality of the environment. Agencies shall develop programs and measures to protect and enhance environmental quality and shall assess progress in meeting the specific objectives of such activities. Heads of agencies shall consult with appropriate Federal, State and local agencies in carrying out their activities as they affect the quality of the environment.

(b) Develop procedures to ensure the fullest practicable provision of timely public information and understanding of Federal plans and programs with environmental impact in order to obtain the views of interested parties. These procedures shall include, whenever appropriate, provision for public hearings, and shall provide the public with relevant information, including information on alternative courses of action. Federal agencies shall also encourage State and local agencies to adopt similar procedures for informing the public concerning their activities affecting the quality of the environment.

(c) Insure that information regarding existing or potential environmental problems and control methods developed as part of research, development, demonstration, test, or evaluation activities is made available to Federal agencies, States, counties, municipalities, institutions, and other entities, as appropriate.

(d) Review their agencies' statutory authority, administrative regulations, policies, and procedures, including those relating to loans, grants, contracts, leases, licenses, or permits, in order to identify any deficiencies or inconsistencies therein which prohibit or limit full compliance with the purposes and provisions of the Act. A report on this review and the corrective actions taken or planned, including such measures to be proposed to the President as may be necessary to bring their authority and policies into conformance with the intent, purposes, and procedures of the Act, shall be provided to the Council on Environmental Quality not later than September 1, 1970.

(e) Engage in exchange of data and research results, and cooperate with agencies of other governments to foster the purposes of the Act.

(f) Proceed, in coordination with other agencies, with actions required by section 102 of the Act.

SEC. 3. *Responsibilities of Council on Environmental Quality.* The Council on Environmental Quality shall:

(a) Evaluate existing and proposed policies and activities of the Federal Government directed to the control of pollution and the enhancement of the environment and to the accomplishment of other objectives which affect the quality of the environment. This shall include continuing review of procedures employed in the development and enforcement of Federal standards affecting environmental quality. Based upon such evaluations the Council shall, where appropriate, recommend to the President policies and programs to achieve more effective protection and enhancement of environmental quality and shall, where appropriate, seek resolution of significant environmental issues.

(b) Recommend to the President and to the agencies priorities among programs designed for the control of pollution and for enhancement of the environment.

(c) Determine the need for new policies and programs for dealing with environmental problems not being adequately addressed.

(d) Conduct, as it determines to be appropriate, public hearings or conferences on issues of environmental significance.

(e) Promote the development and use of indices and monitoring systems (1) to assess environmental conditions and trends, (2) to predict the environmental impact of proposed public and private actions, and (3) to determine the effectiveness of programs for protecting and enhancing environmental quality.

(f) Coordinate Federal programs related to environmental quality.

(g) Advise and assist the President and the agencies in achieving international cooperation for dealing with environmental problems, under the foreign policy guidance of the Secretary of State.

(h) Issue guidelines to Federal agencies for the preparation of detailed statements on proposals for legislation and other Federal actions affecting the environment, as required by section 102(2)(C) of the Act.

(i) Issue such other instructions to agencies, and request such reports and other information from them, as may be required to carry out the Council's responsibilities under the Act.

(j) Assist the President in preparing the annual Environmental Quality Report provided for in section 201 of the Act.

(k) Foster investigations, studies, surveys, research, and analyses relating to (i) ecological systems and environmental quality, (ii) the impact of new and changing technologies thereon, and (iii) means of preventing or reducing adverse effects from such technologies.

SEC. 4. *Amendments of E.O. 11472.* Executive Order No. 11472 of May 29, 1969, including the heading thereof, is hereby amended:

(1) By substituting for the term "the Environmental Quality Council", wherever it occurs, the following: "the Cabinet Committee on the Environment".

(2) By substituting for the term "the Council", wherever it occurs, the following: "the Cabinet Committee".

(3) By inserting in subsection (f) of section 101, after "Budget,", the following: "the Director of the Office of Science and Technology, ".

(4) By substituting for subsection (g) of section 101 the following:

"(g) The Chairman of the Council on Environmental Quality (established by Public Law 91-190) shall assist the President in directing the affairs of the Cabinet Committee."

(5) By deleting subsection (c) of section 102.

(6) By substituting for "the Office of Science and Technology", in section 104, the following: "the Council on Environmental Quality (established by Public Law 91-190)".

(7) By substituting for "(hereinafter referred to as the 'Committee')", in section 201, the following: "(hereinafter referred to as the 'Citizens' Committee')".

(8) By substituting for the term "the Committee", wherever it occurs, the following: "the Citizens' Committee".

Richard Nixon

THE WHITE HOUSE,
March 5, 1970.

[F.R. Doc. 70-2861; Filed, Mar. 5, 1970; 2:29 p.m.]

MR. GAMET: I have also distributed a short summary of the pertinent items in these two Executive Orders which, if you desire, I will read at this time.

(Which said summary is as follows:)

SUMMARY OF IMPORTANT ITEMS OF EXECUTIVE ORDERS 11507 and 11514

E.O. 11507 - Prevention, Control, and Abatement of Air and Water Pollution at Federal Facilities. (Feb. 4, 1970)

Sec. 1 Policy	The intent of the order is that the Federal government in the design, operation, and maintenance of its facilities shall provide leadership in the nationwide effort to protect and enhance the quality of our air and water resources.
Sec. 3 Responsibilities	Heads of agencies shall, with regard to all facilities under their jurisdiction, (a) maintain review and surveillance to ensure that the standards of this order are met on a continuing basis; (b) direct particular attention to identifying potential air and water quality problems; (c) consult with the respective Secretary concerning the best techniques and methods available for the protection and enhancement of air and water quality.
Sec. 4 Standards	Federal facilities shall conform to standards established, performance specifications provided for in the Order. The use of municipal or regional waste collection or disposal systems shall be the preferred method of disposal of wastes from Federal facilities. Requirements shall be established that operators of Federal pollution control facilities meet levels of proficiency consistent with operator certification requirements of the State.
Sec. 5 Procedures	Actions necessary to meet the requirements of the Order pertaining to air and water pollution at existing facilities are to be completed or under way no later than December 31, 1972. Heads of agencies shall present to the Bureau of the Budget by June 30, 1970, a plan to provide for such improvements as may be necessary to meet the required date. Heads of agencies shall not use for any other purpose any of the amounts appropriated and apportioned for corrective and preventive measures necessary to meet the requirements of the Order for the fiscal year ending June 30, 1971, and for any subsequent fiscal year.

E.O. 11514 - Protection and Enhancement of Environmental Quality. (Mar. 5, 1970)

Furtherance of purpose and policy of the National Environmental Policy Act of 1969 (approved Jan. 1, 1970)

Sec. 1 Policy	The Federal government shall provide leadership in protecting and enhancing the quality of the Nation's environment to sustain and enrich human life. Federal agencies shall initiate measures needed to direct their policies, plans and programs so as to meet national environmental goals.
Sec. 2 Responsibilities of Federal Agencies	Heads of Federal agencies shall monitor, evaluate and control on a continuing basis their agencies' activities so as to protect and enhance the quality of the environment. Such activities shall include those directed to controlling pollution and enhancing the environment...
	Develop procedures to ensure the fullest practicable provision of timely public information and understanding of Federal plans and programs with environmental impact in order to obtain the views of interested parties.
	Includes responsibilities of the Council on Environmental Quality.

MR. STEIN: Thank you, Mr. Gamet. Any comments or questions?

By the way, this is a very candid report, as you usually have given.

MR. KLASSEN: Just a question, really a point of information.

MR. STEIN: Yes.

MR. KLASSEN: Mr. Gamet, the various Coast Guard stations around the lake, I am thinking of the ones, for example, on the west shore in Michigan, what happens to their wastes? Are they connected to shore installations? Is that the reason they are not listed here?

MR. GAMET: Yes, sir. We have listed all installations where there are waste discharges to Lake Michigan or the basin.

MR. KLASSEN: Yes. All right, that answers the question.

MR. STEIN: This has been a very candid report, Mr. Gamet, and I should point out to the people here that while we like to show the way with Federal installations, if we look at the volume coming from the Federal installations compared to what else is coming in through Lake

Michigan, it is really a minor source, indeed--

MR. GAMET: That is true.

MR. STEIN: --in relation to the total problem.

MR. GAMET: However--

MR. STEIN: I think the reason we are zeroing in on this so hard is we don't feel that we can ask anyone else to clean up unless we get our own house in order. And when we have been scrabbling with NIKE sites you know what we are talking about, it is not very much.

MR. GAMET: I have to admit that I am embarrassed to make such reports, but I believe we have to report the facts as we know them.

MR. STEIN: That is exactly right. And as always, Mr. Gamet, you have been completely candid and honest with the conferees and everyone you have dealt with through the years and we certainly appreciate it. Your report has been excellent and illuminating.

Thank you very much.

MR. GAMET: Thank you.

MR. STEIN: Mr. Mayo.

MR. MAYO: The next statement will be for the Great Lakes Basin Commission. I understand it will be given by Mr. David Robb in behalf of the Commission Chairman, Mr. Frederick Rouse.

DAVID C. N. ROBB
COMPREHENSIVE BASIN PLANNER
GREAT LAKES BASIN COMMISSION
ANN ARBOR, MICHIGAN

MR. ROBB: Chairman Stein, distinguished conferees, ladies and gentlemen.

Let me first express our appreciation for the opportunity to observe your meeting and to present this statement.

I am David Robb, Comprehensive Planner with the Great Lakes Basin Commission, and am presenting this statement for Frederick O. Rouse, Chairman.

Chairman Rouse was appointed by President Richard Nixon last August to serve as Chairman of the Great Lakes Basin Commission. The Great Lakes Basin Commission is a State-Federal organization charged with the responsibility for coordinating planning for water and related land resources of the Great Lakes Basin. It was established under the authority of the Water Resources

Planning Act of 1965 by Presidential Executive Order in April 1967 at the specific request of the Governors of Indiana, Michigan, Minnesota, Ohio and Wisconsin and with the concurrence of the Governors of Illinois, Pennsylvania and New York. Commission membership is comprised of representatives of the Governors of the eight Great Lakes Basin States, a representative of the Great Lakes Commission (the Interstate Compact Commission) and representatives of the nine Cabinet Level Federal agencies with responsibilities in water and related land resources.

In addition to being charged with coordinating the planning for the water and related land resources of the Great Lakes Basin among the various Federal, State, local and nongovernmental entities in the Basin, the Great Lakes Basin Commission is also charged with preparing and keeping up to date a comprehensive, coordinated, joint plan, which includes consideration of all reasonable alternatives. In addition we are to recommend long-range schedules of priorities for data collection and analysis and for investigation, planning, and construction of projects. We are also authorized to foster and undertake any special studies necessary for preparation of the comprehensive plan.

In reference to the latter I should like to take a few moments to briefly describe our special Great Lakes Study of Limnological Systems Analysis of the Great Lakes. In connection with its planning responsibilities, the Commission finds itself in a position in which the enforcement conferees also seem to find themselves. Specifically, we find ourselves with almost a complete lack of techniques for quantitatively predicting potential effects on the lakes themselves of possible structural or nonstructural alternatives for future management which might be proposed. For example, we are presently unable to predict, other than qualitatively, the effects on water quality parameters such as turbidity, total dissolved solids, or dissolved oxygen, for instance, in one part of Lake Michigan of changes in wastes discharged into another part of the lake.

We are about to embark, in cooperation with the Federal Water Pollution Control Administration, the Upper Great Lakes Regional Commission, the Corps of Engineers, and other organizations, on a Practicability Study of Limnological Systems Analysis of the Great Lakes, which will provide recommendations as to what level of mathematical modeling of the lakes is feasible for the purpose of evaluation of planning alternatives.

In this connection we are pleased to see the recent statements by the Administration and Interior officials on the interest in systems analysis.

The Practicability Study will comprise a survey of needs of member agencies, and of available data and models, evaluation of the above as they relate to the needs of the Commission, development of a demonstration model to illustrate to the Commission members the utility of the systems approach, and preparation of specifications for the main systems analysis study. The modeling effort itself will provide benefits in three major areas. First it will provide answers available from no other source as to the effects in qualitative terms of various planning alternatives on the Great Lakes themselves. Second, it will point out inadequacies in present data collection programs, and third, it will focus on those areas in which additional research in functional relationships is necessary.

The Great Lakes Basin Commission would like to assure the conferees that it recognizes that planning is not an end to itself. The problems which face us are too great, too immediate and far too complex to think for a moment of waiting until all the answers are available. On the contrary, we feel a comprehensive, coordinated, and balanced approach is absolutely necessary. Immediate, ongoing action programs such as the Lake Michigan conferees have previously adopted must be given full support. At the same time, both basic and applied research must be encouraged to expand our understanding of the basic relationships involved.

Formal education in our schools and universities and education of the general public must also be encouraged if we are to receive the broad support so necessary for successful performance of our tasks. All of these areas are important. No one of them can do the job completely alone. Effective and continuing communications among the four areas of interest, planning, action, research and education, is vital if the job of cleaning up and keeping clean our environment is to be accomplished within the time and money constraints which have been imposed upon us. May I also emphasize here the need for flexibility in each of these areas so that as useful information from the others is obtained, programs may be modified to bring the best available technology to bear.

Let me commend the Lake Michigan conferees for your dedication as evidenced by this series of public meetings, and let me assure you of the continuing interest and willingness of the Great Lakes Basin Commission to assist you in any way possible.

Thank you again for the opportunity to attend and to present our views.

MR. STEIN: Any comments or questions?

Thank you very much.

MR. MAYO: Is there anyone here from the Student Council on Pollution and Environment?

(No response.)

That will conclude the presentation of the Federal related programs, Mr. Chairman.

MR. STEIN: Thank you.

Let's call on Mr. Frangos from Wisconsin.

THOMAS G. FRANGOS
WISCONSIN DEPARTMENT OF NATURAL RESOURCES
MADISON, WISCONSIN

MR. FRANGOS: Mr. Chairman, we have a report prepared for submission to the conferees and I will ask Mr. Francis Schraufnagel to read the report into the record.

FRANCIS H. SCHRAUFNAGEL, DIRECTOR
BUREAU OF STANDARDS & SURVEYS
WISCONSIN DEPARTMENT OF NATURAL RESOURCES
MADISON, WISCONSIN

MR. SCHRAUFNAGEL: Mr. Chairman, conferees, ladies and gentlemen.

My name is Francis Schraufnagel. I am the Director of the Bureau of Standards & Surveys of the Wisconsin Department of Natural Resources.

The following is a summary report of Wisconsi actions and programs related to achieving compliance with the recommendations of the first and second session of the conference. Comments have been itemized to correspond with the recommendation numbers as they appear in the summary of the conference.

Recommendation #1 - General Waste Treatment Requirements

The first recommendation pertains to treatment of municipal wastes and calls for an 80 percent removal of total phosphorus from all the sources. At the second session of the conference, this recommendation was clarified to permit each State to decide how the 80 percent overall removal of phosphorus could be attained within its portion of the Lake Michigan Basin.

The Wisconsin Natural Resources Board, at its April 1969 meeting, adopted a policy on phosphorus removal. On the basis of this policy and the recommendation of the conference, Wisconsin is requiring 80 percent removal by the 48 municipalities containing populations of 2,500 or more.

MR. STEIN: Is that 80 or 85?

MR. SCHRAUFNAGEL: Eighty-five.

These municipalities involve only about one-fourth of the sewage sources in the Lake Michigan Basin of Wisconsin but account for nearly 95 percent of the population served by public sewers.

Initial implementation of the 85 percent phosphorus removal policy was by letter of October 20, 1969, to the Lake Michigan pollution sources. Subsequently, formal orders were and are being issued to the municipalities involved. The required compliance dates for phosphorus removal are in agreement with the recommendation. Both the policy and letter are appended as Attachment A.

The interstate water quality standards for Lake Michigan that have been established by Wisconsin, with Federal concurrence and approval, provide for secondary treatment of all municipal wastes. Implementation of this requirement is proceeding on schedule and is expected to be achieved by December 1972. Secondary facilities and the overall phosphorus removal requirement should ensure that municipal treatment effluents will not result in degradation of Lake Michigan water quality.

Recommendations #2 and #8 - Industrial Wastes

All industries located within the basin shall meet requirements of the approved Wisconsin interstate water quality standards, as well as the intrastate standards now in effect.

In the past three months, stringent pollution abatement orders have been issued to the pulp and paper mills along the Lower Fox River as well as those mills located on other streams tributary to Green Bay.

Industries are being encouraged to cooperate with municipalities in providing joint treatment facilities where technically feasible and economically desirable. Four pulp and paper mills and the Green Bay Metropolitan Sewerage Commission have recently completed an investigation to determine the feasibility of joint treatment. At the southern end of the Lower Fox River, some 15 industries and several municipalities are cooperating in a similar study. The Green Bay investigation was financed in part by a grant from the Federal Water Pollution Control Agency and the Fox Valley Council of Governments study was partially funded by the Department of Housing and Urban Development.

Recommendation #3 - Abatement Schedules

In accordance with the recommendations of the Lake Michigan enforcement conference, a list of municipalities and industries discharging wastewaters to the Lake Michigan Basin was submitted to the conferees. This list of pollution sources has been updated and is shown in Attachment B.

Wisconsin's statutes and administrative practices call for periodic drainage basin or sub-basin surveys, report of findings, public hearings and finally issuance of orders to those pollution sources where corrective measures need to be taken.

Following the receipt of the Summary of Conference, the Wisconsin Department of Natural Resources issued orders and letters to all municipalities citing the need for compliance with the State water quality standards and the enforcement conference recommendations. Orders were issued in those instances where public hearings had been conducted and letters were sent to the remaining sources. The 1970 drainage basin surveys will complete coverage of Lake Michigan Basin sources. Orders subsequently issued to these sources will legally reinforce requirements which were covered by letter from the Department. No change is anticipated in the conference compliance dates.

The basin surveys show the changes that take place in water quality and pollution sources. In order for the list to be accurate and up-to-date, there are some additions and deletions offered for your review and consideration.

In the Milwaukee basin survey, for which orders were recently issued, it was concluded that steps should be taken to reduce washwater wastes at several municipal water treatment plants. Consequently, orders were issued to the following water filtration plants:

City of South Milwaukee
City of Milwaukee (Howard Avenue Plant)
City of Milwaukee (Linwood Avenue Plant)
City of Cudahy
Peter Cooper Corporation, Oak Creek

These have been added to our list of waste sources.

Several deletions from the list of Wisconsin municipalities and industries affecting Lake Michigan water quality seem appropriate at this time. It is suggested that the following entities should be removed from the tables, with justification for removal as noted:

Mt. Pleasant. Provided sewers and connected to Racine sewage treatment plant. This is no longer a source of pollution.

F. H. Schraufnagel

Greendale. Connected to Milwaukee Metropolitan sewage system. No longer a source of pollution.

Mequon is the same.

Southern Colony. No phosphorus removal requirement and discharge does not affect Lake Michigan.

Fox River Heights Subdivision. Connected to Green Bay metropolitan system.

Racine County Highway and Office. No phosphorus removal requirement and discharge does not affect Lake Michigan.

Cleveland. No phosphorus removal requirement and discharge does not affect Lake Michigan.

Maribel. A community of 250 with septic tanks; no effect on Lake Michigan.

Pine River Dairy, Hipke Cheese Factory, Two Creeks Dairy, and Osman Cheese Factory all have adequate treatment facilities, are not located near Lake Michigan, and have no effect on it.

Fort Howard Paper Company connected their sanitary sewage to the Green Bay metropolitan system, as also did the Paper Converting Machine Company in Green Bay.

Midwest Breeders, located near Shawano, far removed from Lake Michigan. There is no phosphorus removal requirement and discharge does not affect Lake Michigan.

Recommendations #4 and #9 - Disinfection

Wisconsin endorses the continuous disinfection of municipal treatment plant effluents and those industrial discharges containing pathogenic bacteria which may have a deleterious effect on persons coming into contact with Lake Michigan water. It is our statewide policy that throughout the year all biomechanical municipal treatment facilities must provide continuous disinfection. Although some Wisconsin municipalities in the Lake Michigan Basin are not in compliance with this recommendation, progress toward continuous disinfection is being shown.

Recommendations #5 and #14 - Areawide Sewerage Systems

The recommendations concerning the encouragement of unified collection systems for contiguous areas and fostering the replacement of malfunctioning septic tanks with adequate collection and treatment facilities were incorporated into a "Policy on Proliferation of Waste Treatment Plants." This policy reaffirms Wisconsin position encouraging the joint treatment of municipal and industrial wastes. A copy of the May 1969 board policy is appended as Attachment C.

Recommendation #6 - Bypassing

The major combined sewer systems in Wisconsin have been designed and built with suitable overflow structures which insure the full utilization of the capacity of the intercepting sewers. Action is being taken to minimize bypassing whenever possible. All orders issued by the Department contain requirements for reducing bypassing from combined sewers or where "clear water" problems exist. Flow regulating devices may be effective in an overall program of reducing pollution from combined wastes.

Recommendation #7 - Combined Sewers

Combined sewered areas are being separated in relation to urban renewal projects and whenever reconstruction projects permit such separation. No new combined sewers are being installed; however, structurally unsound existing combined sewers are being replaced in limited instances when it is not possible to separate the tributary sewers.

F. H. Schraufnagel

The high cost of sewer separation in the cities makes it imperative that more practical methods of handling combined sewage be developed. Different techniques are being investigated at Federal demonstration grant projects in the cities of Chippewa Falls, Milwaukee and Kenosha.

Chippewa Falls is discharging high flows associated with stormwater into a holding pond where the waste is stored until the flow subsides sufficiently to allow the pond contents to be directed to the treatment facility.

The city of Milwaukee installed a large tank which holds combined sewage for subsequent pumping to the interceptor sewers when the flow subsides. This facility is provided with chlorination equipment to allow primary sedimentation and disinfection of the combined sewage flow prior to discharge when the flow exceeds the capacity of the tank.

At Kenosha it is proposed to develop an expandable treatment facility to cope with combined sewage flows by providing additional secondary treatment capacity. Plans have been approved and the city is proceeding on the project.

F. H. Schraufnagel

Provisions are made at the three demonstration projects to provide records of flow volumes and treatment achieved so that these systems can be appraised. None of the three projects in Wisconsin appear to be panaceas, yet each has merit and may provide a solution for certain situations and areas.

Recommendation #10 - Nuclear Discharges and Thermal Pollution

A staff member participated in the development of "Report of the Committee on Nuclear Powerplant Waste Disposal to the Conferees of the Lake Michigan Enforcement Conference." Wisconsin is in substantial agreement with the recommendations contained in that report.

Information on the status of two nuclear powerplants under construction along Lake Michigan in Wisconsin are shown in Attachment D.

Recommendation #11 - Dredging

This recommendation called for prohibition of the dumping of polluted material into Lake Michigan to be accomplished as soon as possible. The Corps of Engineers and the States were requested to report to the conferees on their programs. We heard a report this morning from the Corps of Engineers on this matter.

Of the eight Wisconsin harbors said to have had polluted sediments, six were dredged in 1969 and the spoil was disposed of in deep water areas as in previous years. Of the two remaining, Menominee harbor was not scheduled for dredging in 1969, and there was no dredging at Racine because of the high lake level. This year, Green Bay is providing a land disposal area with city participation in funding the added costs.

On June 6, 1969, Governor Knowles, with the advice of an ad hoc committee, sent a position statement to the Corps of Engineers regarding Great Lakes spoil disposal. The Governor pointed out that more scientific research in this area is urgently needed to assess the impact of land disposal techniques on wetlands. Development of an equitable formula for financing is also needed. It was suggested that a long-range program be considered by the Great Lakes Basin Commission.

Recommendation #12 - Alewives

In 1968 the four States contributed monies which were matched by Federal funds to cope with the anticipated alewife dieoff. Nets and fish pumps were acquired to skim off and remove the dead fish. Although a massive dieoff did not occur in the past two summers, experience gained should place the participants in a better position to handle the problem should the condition again develop.

Recommendation #13 - Watercraft Pollution

Recent Wisconsin legislation (Attachment E) has extended the boat toilet law to include outlying waters of the State. This prohibits the operation of boats equipped with toilets on any outlying waters of the State unless the toilet wastes are retained for shore disposal. The new law does not apply to boats engaged in international or interstate commerce. Federal regulation is needed to control sewage pollution from the latter sources.

We heard something on that this morning regarding Federal legislation on this matter.

Wisconsin law applies to outlying waters with respect to prohibiting the throwing or depositing of trash, garbage, debris, litter, etc., into waters of the State and provides a fine of up to $200 for each offense. The total number of cases on outlying, inland and boundary waters amounted to 323 in 1968 compared with 175 last year.

I am not sure why the sharp drop last year. We did up the fine from $100 to $200. Perhaps this had something to do with it.

Recommendation #15 - Pesticides

A staff member participated in the work of the Technical Committee on Pesticides. A report was submitted to the conferees prior to the second session. The report recommendations have been implemented in Wisconsin.

Last year, Governor Knowles signed into law Chapter 146, Laws of 1969 (Attachment F), which pertained to the use and regulation of pesticides. The law establishes a Pesticide Review Board with representation from health, agriculture and natural resources. All rules regarding pesticides promulgated by any Wisconsin State agency are subject to revision and approval by the Pesticide Review Board.

Chapter 426, Laws of 1969 (Attachment F), was published on March 11, 1970. This law prohibits the distribution, sale and use of DDT except under certain limited conditions.

The Wisconsin Department of Natural Resources responded to the Lake Michigan enforcement conference pesticide recommendations and has collected approximately 1,000 samples involving water, plankton, fish, invertebrates and waste effluents. The intent of the program is to evaluate potential point sources. The Department has also cooperated with the U. S. Department of Agriculture in the evaluation of pesticide sources within municipalities and has made onsite visits to those sites where pesticides could be a likely contaminant.

The Department sponsored research projects and is currently cooperating with the FWPCA in further studies to evaluate the impact of new pesticide control programs.

Incidentally, in this regard we are also working on the PCB problem and trying to locate some of the point sources where this might be involved. So far we haven't had too much success.

Recommendation #17 - Water Quality Monitoring

Implementation of the monitoring committee recommendations has generally been accomplished. This included increasing the number and frequency of some tests and the addition of three sampling stations and three stream gauging stations. Data from the stations is now entered in our computer and is also transmitted to the

FWPCA for placement in the STORET system. The information will be evaluated later this year to determine changes that might be indicated.

An automated network of five stations is planned for the Lower Fox River in the section between Lake Winnebago and Green Bay. Key parameters such as dissolved oxygen, temperature, pH and turbidity readings will be relayed to a central point at half hourly or hourly intervals and computerized to facilitate data analysis. The system is expected to be operational later this year.

Recommendation #18 - Oil & Hazardous Materials

In response to Recommendation #18, field personnel of the Department inventoried all sites where potential exists for a major spill of oils and other hazardous materials which might affect the water quality of Lake Michigan.

The Federal contingency plan developed to minimize damages should a major spill occur in interstate waters is being complemented at the State and local level.

Recommendation #19 - Water Quality Analyses

The Lake Michigan water intake at Milwaukee is included in the FWPCA water quality surveillance system.

F. H. Schraufnagel

There are some disadvantages in sampling at the Green Bay water intake. At the last session of the conference, it was recommended that the proposed sampling site be changed to Two Rivers.

Recommendation #20 - Coast Guard Monitoring

This recommendation pertains to activities of the U. S. Coast Guard and their plans for monitoring and reporting pollution.

Recommendation #21 - Oil Pollution

All significant controllable discharges of oil to the Wisconsin section of Lake Michigan have been eliminated. However, there are a significant number of relatively minor oil pollution problems, particularly in intrastate metropolitan watercourses. The Department is currently working with officials in the Milwaukee area in an attempt to minimize the effects, locate the sources and eliminate the discharges.

Recommendation #22 - Research

The Wisconsin Legislature has provided funds specifically for water resources research and data collection. During the past two years, approximately $500,000 has been made available to the Department for these programs. Investigations sponsored or undertaken by the Division of Environmental Protection span a broad range of water supply and water pollution control problems. A summary of Division projects appears in Attachment G.

Recommendation #24 - Construction Grants

The $800 million appropriation for FWPCA construction grants, together with Wisconsin's ORAP-200 pollution abatement bonding program, is stimulating the construction of municipal treatment facilities. Last year, Federal funds allocated to Wisconsin amounted to about $4.5 million, while this year's Wisconsin allotment is approximately $17.1 million.

It is likely that new project starts for the 1969-1971 biennium will total at least $80 million, the majority of which will be initiated in the second half of the biennium. Further acceleration should occur in the 1971-1973 biennium with new construction starts totaling in excess of $100 million.

Mr. Chairman, this completes my presentation.

MR. STEIN: Thank you.

Without objection, the attachments will appear in the record as if read.

(Which said attachments are as follows:)

State of Wisconsin
Department of Natural Resources

POLICY ON PHOSPHORUS REMOVAL FROM EFFLUENT
(Adopted April 17, 1969)

PREAMBLE

Phosphorus is a key nutrient controlling fertility of natural waters. Small concentrations of phosphorus may stimulate the growth of blue-green algae and other organisms, making rivers and lakes unsuitable for recreation and increasing water purification costs. Where algae do not thrive, increased growth of floating and bottom-rooted weeds impedes stream flow and complicates other aspects of water management.

Sewage effluents often contribute large amounts of phosphorus to surface waters. Methods exist for substantial removal of phosphorus from sewage and industrial wastes.

POLICY

Prompt action to reverse the present over-fertilization of waters of Wisconsin and to enhance the quality of these waters for all useful purposes is essential.

It is the policy of the Natural Resources Board that:

1. The Department of Natural Resources may require any wastewater discharger--regardless of population, volume or type of waste discharged, or geographic location--to provide for removal of excess amounts of phosphorus where such discharges are causing, or may cause, over-fertilization of surface waters.

2. In conformance with recommendations of the Lake Michigan Enforcement Conference, the Department shall take the actions necessary to achieve an overall reduction of at least 80 percent of the phosphorus tributary to municipal and industrial waste treatment facilities located within the Lake Michigan drainage basin by December 31, 1972.

Attachment A

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

L. P. Voigt
Secretary

October 20, 1969

During the summer of 1968, municipalities and industries in the Lake Michigan drainage basin were notified by the Division of Environmental Protection of certain recommendations of the Lake Michigan Enforcement Conference by either a water pollution abatement order or a request for a letter of intent.

The first two recommendations of the conference were concerned with the reduction of total phosphorus from municipalities and industries such that their effluent would not result in degradation of Lake Michigan's water quality.

At the second session of the Enforcement Conference in early 1969, it was agreed that each state would decide on how to achieve an overall reduction of at least 80 percent of the total phosphorus in municipal and industrial effluents in that state's portion of the Lake Michigan Basin.

A tabulation of Wisconsin communities in the Lake Michigan Basin reveals those with populations of less than 2,500 comprise 73 percent of the communities but contribute only 5-6 percent of the total phosphorus potential from sewage. In the smaller communities, phosphorus removal costs are disproportionately high and facilities are less likely to achieve consistently good removals. The overall objective can be met by attaining 85 percent removal efficiencies at the larger treatment plants.

Amended orders incorporating these new treatment requirements will be issued soon and new orders will also reflect this phosphorus removal change. Further information on phosphorus removal considerations is enclosed.

Very truly yours,
Division of Environmental Protection

Thomas G. Frangos

Thomas G. Frangos
Administrator

Encl.

MUNICIPALITIES
3/25/70

WISCONSIN WASTE WATER SOURCES AFFECTING LAKE MICHIGAN WATER QUALITY

Source	Receiving Waters	Existing Treatment	Remedial Needs	Estimated Date of Completion	Pollution Abatement Order No.	Comments
Mt. Pleasant	Pike River	Septic tanks	None	-		New sewers
Kenosha	L. Michigan	Secondary (Act. sl.) Disinf.	Phos. Rem. - Sewer Sep. - Annual Reports -	12/72 12/77 11/70	4B-68-3-3A	
Greendale	Root River	Connected to Milw. Met.	None			
Hales Corners	Root River	Secondary (Filter)	Connect to Milw. Met. - Annual Reports -	12/72 11/70	4B-68-4-10A	
Franklin	Root River (Trib)	Secondary (Filter)	Connect to Milw. Met. - Disinf. - Annual Reports -	12/72 8/70 11/70	4B-68-4-6A	
Southern Colony	W. Br. Root River	Secondary (Act. sl.) Disinf.				Treatment satisfactory.
Racine Co. Hwy. & Office	Hoods Creek Root River	Secondary (Act. sl.) Lagoon	Disinf.	8/70	4B-68-4-22A	
Racine	Lake Michigan	Secondary (Act. sl.) Disinf.	Phos. Rem. - Sewer Sep. - Annual Reports -	12/72 12/72 11/70	4B-68-4-21A	
Oak Creek (Oakview Subdiv. #3)	Trib. Oak Creek	Lagoon	Disinf. - Connect to Milw. Met. - Annual Reports -	8/70 12/72 11/70	4B-68-4-19A	

Attachment B

WISCONSIN WASTE WATER SOURCES AFFECTING LAKE MICHIGAN WATER QUALITY

Source	Receiving Waters	Existing Treatment	Remedial Needs	Estimated Date of Completion	Pollution Abatement Order No.	Comments
West Bend	Milwaukee R.	Secondary (Act. sl.) Disinf.	Phos. Rem. -	12/72	4B-68-5-25A	
			Clear Water or Adeq. Treatment -	12/72		
			Annual Reports -	11/70		
Grafton	Milwaukee River	Secondary (Act. sl.)	Disinf. -	5/70	4B-68-5-12A	
			Clear Water or Adeq. Treatment -	12/72		
			Phos. Rem. -	12/72		
			Elim. By-pass -	7/77		
			Annual Reports -	11/70		
Mequon	Milwaukee River	Connected to Milw. Met.	None			
Thiensville	Milwaukee River	Secondary (Act. sl.)	Disinf. -	5/70	4B-68-5-24A	
			Clear Water or Adeq. Treatment -	12/72		
			Phos. Rem. -	12/72		
			Elim. By-pass -	7/77		
			Annual Reports -	11/70		
Cedarburg	Cedar Creek	Secondary (Tr. filter)	Disinf. -	5/70	4B-68-5-5A	
			Phos. Rem. -	12/72		
			Adeq. Treatment -	12/72		
			Annual Reports -	11/70		
Germantown	Menomonee River	Secondary (Tr. filter) Disinf.	Adeq. Treatment -	6/71	4B-68-5-11A	
			Phos. Rem. -	12/72		
			Annual Reports -	11/70		
Menomonee Falls	Menomonee River	Secondary (Act. sl., Tr. filter) Disinf.	Connect to Milw. Met. -	12/72	4B-68-5-18A	
			or			
			Phos. Rem. -	12/72		

WISCONSIN WASTE WATER SOURCES AFFECTING LAKE MICHIGAN WATER QUALITY

Source	Receiving Waters	Existing Treatment	Remedial Needs	Estimated Date of Completion	Pollution Abatement Order No.	Comments
Milw. Metropolitan Sew. Commission			Combine sewers & clear water - Annual Reports -	7/77 7/70	4B-70-5-4	
Jones Island Plant	Lake Michigan	Secondary (Act. sl.)	Disinf. - Phos. Rem. -	12/71 12/72		
South Shore	Lake Michigan	Primary Disinf.	Secondary - Phos. Rem. -	12/72 12/72		
South Milwaukee	Lake Michigan	Primary Disinf.	Secondary - Phos. Rem. -	12/72 12/72		Hearing to be held, plans for adeq. treatment submitted.
South Milwaukee (water treatment)	Lake Michigan	None	Susp. Solids Rem. -	12/72	4B-70-5-6	
Milwaukee (Howard Avenue water treatment)	Lake Michigan	None	Susp. Solids Rem. -	12/72	4B-70-5-2	
Milwaukee (Linwood Avenue water treatment)	Lake Michigan	None	Susp. Solids Rem. -	12/72	4B-70-5-3	
Cudahy (water treatment)	L. Michigan	None	Susp. Solids Rem. -	12/72	4B-70-5-1	
Sheboygan	Lake Michigan	Secondary (Act. sl.) Disinf.	Phos. Rem. - Comb. sewers -	12/72 7/77		Hearing to be held 1970.
Port Washington	Lake Michigan	Primary Disinf.	Secondary - Phos. Rem. -	12/72 12/72		Hearing to be held 1970.
Cleveland	Centerville Ck.	Secondary (Act. sl.) Disinf.				Hearing to be held 1970.

WISCONSIN WASTE WATER SOURCES AFFECTING LAKE MICHIGAN WATER QUALITY

Source	Receiving Waters	Existing Treatment	Remedial Needs	Estimated Date of Completion	Pollution Abatement Order No.	Comments
Kiel	Sheboygan River	Secondary (Act. sl.)	Phos. Rem. - Disinf.	12/72		Hearing to be held 1970.
Sheboygan Falls	Sheboygan River	Secondary Disinf.	Phos. Rem. -	12/72		Hearing to be held 1970.
Plymouth	Mullet River Sheboygan River	Secondary	Phos. Rem. - Disinf.	12/72		Hearing to be held 1970
Chilton	Manitowoc River	Secondary (Act. sl.-Tr. filter) Disinf.	Phos. Rem. -	12/72	4B-69-7-6	
Manitowoc	Lake Michigan	Secondary (Tr. filter) Disinfection	Clear water elim. or Adeq. Treatment Report - Phos. Rem. Rept. -	4/70 4/70	4B-69-7-10	
Two Rivers	Lake Michigan	Secondary (Act. sl.)	Phos. Rem. - Disinfection	12/72		Basin Invest. 1970.
Maribel	W. Twin River	Septic Tanks	Secondary & Disinf.-	12/72		Basin invest. 1970 - plans submitted.
Kewaunee	Kewaunee River	Secondary, Disinf.	Phos. Rem. -	12/72		Basin Invest. 1970.
Sturgeon Bay	Sturgeon Bay Canal	Secondary (Act. sl.) Disinf.	Phos. Rem. -	12/72		Basin Invest. 1970.
Algoma	Ahnapee River	Secondary (Act. sl.) Disinf.	Phos. Rem. -	12/72		Basin Invest. 1970.
North Fond du Lac	Trib. Fox River	Secondary (Tr. filter)	Disinf. - Clear Water Phos. Rem. - Annual Reports -	5/70 12/72 12/72 11/70	4B-68-11a-65A	

WISCONSIN WASTE WATER SOURCES AFFECTING LAKE MICHIGAN WATER QUALITY

Source	Receiving Waters	Existing Treatment	Remedial Needs	Estimated Date of Completion	Pollution Abatement Order No.	Comments
Oshkosh	Fox River	Primary	Disinf. - Secondary - Phos Rem. - Combined sewer - Annual Reports -	5/70 12/72 12/72 12/77 11/70	4B-68-11a-68A	
Fox River Heights Subd., Green Bay	Fox River	Septic Tanks Interceptors to Green Bay Met. and De Pere	Const. of add. sewers and interceptor -	12/72		Plans submitted (add. info. reqd on plan revision 1/15/70)
Portage	Fox River	Secondary (Tr. filter)	Phos. Rem. - Annual Reports -	12/72 11/70	4B-68-11a-70AA	
Berlin	Fox River	Secondary (Tr. filter) Disinf.	Clear Water or Adeq. Treatment - Phos. Rem. - Annual Reports -	12/72 12/72 11/70	4B-68-11a-47A	
Ripon	Fox River	Secondary (Tr. filter)	Disinf. - Clear Water - Adeq. Treatment - Phos. Rem. - Annual Reports -	5/70 12/71 12/72 12/72 11/70	4B-68-11a-74A	
Fond du Lac	E. Br. Fond du Lac	Secondary (Tr. filter) Disinf.	Clear Water and Adeq. Treatment- Phos. Rem. - Annual Reports -	12/72 12/72 11/70	4B-68-11a-55A	
Neenah-Menasha	Fox River	Secondary (Act. sl.)	Disinf. - Adeq. Solids Hdlg. - Adeq. Treatment - Phos. Rem. - Annual Reports -	6/70 9/70 9/72 9/72 11/70	4B-68-11a-30A	

WISCONSIN WASTE WATER SOURCES AFFECTING LAKE MICHIGAN WATER QUALITY

Source	Receiving Waters	Existing Treatment	Remedial Needs	Estimated Date of Completion	Pollution Abatement Order No.	Comments
Tn. Menasha San. Dist. #4	Fox River	Secondary (Act. sl.) Disinf.	Adeq. Treatment -	3/70	4B-68-11a-31A	
			Phos. Rem. -	9/72		
			Annual Reports -	11/70		
Appleton	Fox River	Secondary (Act. sl.)	Disinf. -	6/70	4B-68-11a-2A	
			Adeq. Treatment -	9/72		
			Phos. Rem. -	9/72		
			Annual Reports -	11/70		
Kimberly	Fox River	Secondary (Act. sl.)	Disinf. -	6/70	4B-68-11a-28A	
			Elim. By-pass -	12/70		
			Adeq. Treatment -	9/72		
			Phos. Rem. -	9/72		
			Annual Reports -	11/72		
Little Chute	Fox River	Secondary (Act. sl.)	Disinf. -	6/70	4B-68-11a-29A	
			Clear Water -	12/70		
			Adeq. Treatment -	9/72		
			Phos. Rem. -	9/72		
			Annual Reports -	11/70		
Kaukauna	Fox River	Secondary (Act. sl.)	Disinf. -	4/70	4B-68-11a-23A	
			Adeq. Treatment -	9/72		
			Phos. Rem. -	9/72		
			Combined sewers -	9/72		
			Annual Reports -	11/70		
De Pere	Fox River	Secondary (Act. sl.) Disinf.	Adeq. Treatment -	9/72	4B-68-11a-10A	
			Phos. Rem. -	9/72		
			Combined sewers -	9/72		
			Annual Reports -	11/70		
Green Bay Met. Sewer District	Fox River	Secondary (Tr. filter) Disinf.	Combined sewers -	9/72	4C-68-11a-2	
			Adeq. Treatment -	9/72		
			Phos. Rem. -	9/72		

WISCONSIN WASTE WATER SOURCES AFFECTING LAKE MICHIGAN WATER QUALITY

Source	Receiving Waters	Existing Treatment	Remedial Needs	Estimated Date of Completion	Pollution Abatement Order No.	Comments
Austin-Straubel Airport	Trib. Fox River	Secondary (Act. sl.) Disinf.	None			
Shawano	Wolf River	Secondary (Tr. filter) Disinf.	Phos. Rem. -	12/72		Hearing to be held 1970.
New London	Wolf River	Secondary Disinfection	Phos. Rem. -	12/72		Hearing to be held 1970.
Shawano Lake San. Dist.	Wolf River	Septic Tanks				Hearing to be held 1970.
Clintonville	Pigeon River	Secondary (Act. sl.)	Disinf. - Phos. Rem. -	5/69 12/72		Hearing to be held 1970.
Waupaca	Wolf River	Primary Disinf.	Secondary - Phos. Rem. -	12/72 12/72		Hearing to be held 1970.
Oconto	Oconto River	Secondary (Tr. filter)	Disinf. - Combined sewers - Adeq. Treatment & Phos. Rem. Report -	5/70 7/77 8/70	4B-70-14-3	
Peshtigo	Peshtigo River	Secondary (Tr. filter) Disinf.	Combined sewers & clear water report - Adeq. Treatment & Phos. Rem. Report -	6/70 9/70	4B-70-15-4	
Marinette	Menominee River	Primary Disinf.	Secondary - Phos. Rem. - Combined sewers - Annual Reports -	12/72 12/72 7/77 11/70	4B-70-16-3	

INDUSTRIES
3/25/70

WISCONSIN WASTE WATER SOURCES AFFECTING LAKE MICHIGAN WATER QUALITY

Source	Receiving Waters	Existing Treatment	Remedial Needs	Estimated Date of Completion	Pollution Abatement Order No.	Comments
American Motors	Pike River	Oil Separator	Prevent Oil Spills	None		Educational program.
American Motors (Lakefront plant)	Lake Michigan	Skimming & Settling	Eliminate sewage outfalls	Essentially Completed		
Anaconda American Brass Company	Lake Michigan	Neutralization	Effluent limitations on concen. of Cn, Cd, Cr, Ni, Cu, Zn, Pb, Fe, and Phenolic compounds	12/72	4B-68-3-2A	
Wisconsin Elec. Power Co. (Oak Creek Plant)	Lake Michigan	Settling, Secondary Act. Sludge	Adequate treatment Annual reports	12/72 11/70	4B-68-4-25A	STP effluent to leaching bed.
J.I. Case Company	Lake Michigan	None	Chem. Floc. for S.S. and Oil	1970 (U.C. 1969)		Final plans approved 11/6/69.
Peter Cooper Corp.	Lake Michigan	Screening & primary treatment	Connect to Milw. Met. Sew. Commission	7/70	4B-70-5-7	
Peter Cooper Corp. (Water Trt. Plant)	Lake Michigan	None	Adequately treat backwash waters	12/72	4B-70-5-8	
Edgewoods Power Plant	Lake Michigan	Sedimentation	None			
Wisconsin Elec. Co.	Lake Michigan	Sedimentation	None			
Pine River Dairy Co.	Lake Michigan	Septic tank & Absorption	None			
Hipke Packing Corp.	Centerville Ck.	Lagoon	None			
Osman Cheese Fty.	Trib. L. Michigan	Septic Tank	None			
Two Creeks Dairy	Trib. L. Michigan	Septic Tank	None			

WISCONSIN WASTE WATER SOURCES AFFECTING LAKE MICHIGAN WATER QUALITY

Source	Receiving Waters	Existing Treatment	Remedial Needs	Estimated Date of Completion	Pollution Abatement Order No.	Comments
Kewaunee Nuclear Power Plant	L. Michigan	Secondary treatment Act. Sludge	None			
Point Beach Nuclear Power Plant	L. Michigan	Secondary Act. Sludge	None			Operational 1972
Bailey's Harbor Laundary	L. Michigan	None	Adequate treatment or Joint treatment		WF-10-15-101-20	
Gilbert Paper Company	Fox River	Save-all & metro. sewers	Joint treatment or B.O.D. & ss. reducting Semiannual rept.	12/72 7/70	4B-68-11a-15A	
John Strange Paper Co.	Fox River	Save-all & metro. sewers	Joint treatment or ss reduction Semiannual report	12/72 7/70	4B-68-11a-22A	
George A. Whiting Paper Co.	Fox River	Save-all	Joint treatment or ss. reduction Semiannual report	12/72 7/70	4B-68-11a-14A	
Bergstrom Paper Co.	Fox River	Clarification	Joint treatment or B.O.D. & ss reduction Semiannual report	12/72 7/70	4B-68-11a-3A	
Kimberly-Clark Neenah Div.	Fox River	Save-all & Metro. sewers	Joint treatment or B.O.D. & ss reduction Semiannual report	12/72 7/70	4B-68-11a-27A	
Badger Globe Mill	Fox River	Save-all & metro. sewers	Joint treatment or ss reduction Semiannual report	12/72 7/70	4B-68-11a-24A	

WISCONSIN WASTE WATER SOURCES AFFECTING LAKE MICHIGAN WATER QUALITY

Source	Receiving Waters	Existing Treatment	Remedial Needs	Estimated Date of Completion	Pollution Abatement Order No.	Comments
Lakeview Mill	Fox River	Save-all & metro. sewers	Joint treatment or ss reduction	12/72	4B-68-11a-26A	
			Semiannual report	7/70		
Kimberly Mill	Fox River	Save-all & Lagoon	Joint treatment or ss reduction	12/72	4B-68-11a-25AA	
			Semiannual report	7/70		
STP	Fox River	Secondary	None		-	
Riverside Paper Corp.	Fox River	Save-all	Joint treatment or ss reduction	12/72	4B-68-11a-36A	
			Semiannual report	7/70		
Consolidated Papers, Inc.	Fox River	S.S.L. Evaporation	Joint treatment or B.O.D. & ss reduction	12/72	4B-68-11a-9A	
			Semiannual report	7/70		
Combined Paper Mills, Inc.	Fox River	Save-all and Clarification	Joint treatment or B.O.D. & ss reduction	12/72	4B-68-11a-8A	
			Semiannual report	7/70		
Thilmany Pulp and Paper Company	Fox River	Save-all and Lagoons	Joint treatment or B.O.D. & ss reduction	12/72	4B-68-11a-41A	
			Semiannual report	7/70		
Nicolet Paper Corp.	Fox River	Save-all	Joint treatment or ss reduction	12/72	4B-68-11a-33A	
			Semiannual report	7/70		
U.S. Paper Mill Corp.	Fox River	Save-all & Lagoon	Joint treatment or ss reduction	12/72	4B-68-11a-42A	
			Semiannual report	7/70		

WISCONSIN WASTE WATER SOURCES AFFECTING LAKE MICHIGAN WATER QUALITY

Source	Receiving Waters	Existing Treatment	Remedial Needs	Estimated Date of Completion	Pollution Abatement Order No.	Comments
Ft. Howard Paper Co.	Fox River	Save-all & Lagoon	Joint treatment or B.O.D. & ss reduction Semiannual report	12/72 7/70	4B-68-11a-11A	
(STP)	Fox River	-	None	-	-	Connected to mun. system.
American Can Company	Fox River	S.S.L. Evap. and Lagoons	Joint treatment or B.O.D. & ss reduction Semiannual report	12/72 7/70	4B-68-11a-1A	
Charmin Paper Products Company	Fox River	S.S.L. Evaporators	Joint treatment or B.O.D. & ss reduction Semiannual report	12/72 7/70	4B-68-11a-6A	
Green Bay Packaging, Inc.	Fox River	Fluidized bed and Clarification	Joint treatment or B.O.D. & ss reduction Semiannual report	12/72 7/70	4B-68-11a-17A	
Paper Converting Machinery Company	Trib. Dutchman Creek	-	None	-	-	Connected to city system.
Shawano Paper Mills	Wolf River	Save-alls	None			
Midwest Breeders	Wolf River	Neutralization and Aeration	Adequate treatment Disinfection			Hearing in 1970.
Scott Paper Company	Oconto River	Save-alls & Lagoon Primary clarification Sludge centrifugation Evaporation & road-binder hauling	Prel. report & time schedule for B.O.D. & ss reduction	5/70	4B-69-14-5	

WISCONSIN WASTE WATER SOURCES AFFECTING LAKE MICHIGAN WATER QUALITY

Source	Receiving Waters	Existing Treatment	Remedial Needs	Estimated Date of Completion	Pollution Abatement Order No.	Comments
Badger Paper Mills, Inc.	Peshtigo River	Save-alls and land disposal	Prelim. report & time schedule for B.O.D. & ss reduction	6/70	4B-69-15-1	
Scott Paper Company (Marinette)	Menominee River	Save-alls, screens and roadbinder hauling	Prel. report & time schedule for B.O.D. & ss reduction	6/70	4B-70-16-5	

State of Wisconsin Department of Natural Resources

Attachment C

Policy on Proliferation of Waste Treatment Plants

To avoid costly errors through the construction of a multiplicity of waste treatment plants in conflict with area-wide or basin-wide concepts of pollution control, a clear declaration of policy is necessary.

It is the policy of the State of Wisconsin Natural Resources Board to:

1. Promote the use of unified sewage collection systems serving contiguous areas.
2. Encourage (in accordance with Section 144.07, Wisconsin Statutes) connection of developing areas to existing treatment plants wherever such action is fully feasible and clearly in the public interest.
3. Discourage construction of sewage treatment facilities not designed in accordance with an acceptable area-wide plan.
4. Discourage proliferation of small sewage treatment plants in contiguous areas and encourage abandonment of multiple plants in favor of joint treatment where technically feasible and economically desirable.
5. Disapprove use of state construction grant monies for construction of treatment plants not in conformity with an acceptable plan.
6. Encourage joint treatment of municipal and industrial wastes where physically and economically practical.
7. Disapprove installation of septic tank-soil absorption systems in areas where risk of malfunction or failure is high, and where alternate collection and treatment systems can be provided.
8. Promote replacement of nonfunctioning septic tanks with alternate collection and treatment systems to meet the intent of this policy.

Adopted: Mav 15, 1969

Attachment D

1970 Status Report - Nuclear Power Plants

Wisconsin has two sites, 4½ miles apart, on Lake Michigan where nuclear power plants are currently under construction.

The Point Beach Plant will consist of two units, each capable of producing 454,600 kilowatts. The first unit should be in operation this year and the second unit is scheduled to be operational in 1971.

The Kewaunee plant will be capable of generating 527,000 kilowatts and is scheduled to be operational in 1972. All three units are of the pressurized water reactor type. Because of the close proximity of the two sites, environmental studies encompass both plants.

A University of Wisconsin-Milwaukee pre-operational environmental study was funded in 1968. The object of the study was to demonstrate any thermal and radiological effects around both sites.

Two Wisconsin state agencies, the Division of Health and the Division of Environmental Protection, are jointly monitoring the sites in regard to radioactivity and thermal effects. A private consulting firm was hired by the power companies to conduct a radiological study at the plant sites.

The Great Lakes Research Division of the University of Michigan has established 50 sampling sites in Lake Michigan. The study will include an inventory of materials presently in the lake, and a projection of the condition of the lake in 1975.

Both plants will have separate treatment facilities for domestic wastes. Plans and specifications for these sewage treatment plants have been approved by the State of Wisconsin.

Attachment E

STATE OF WISCONSIN

1969 Assembly Bill 417 Date published*: March 19, 1970

CHAPTER 471 , LAWS OF 1969

AN ACT to amend 30.71 (1); and to repeal and recreate 30.71 (2) of the statutes, relating to use of boat toilets on outlying waters of the state.

The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:

SECTION 1. 30.71 (1) of the statutes is amended to read:

30.71 (1) No person shall operate any boat equipped with toilets on inland waters of this state~~, except the Mississippi river,~~ unless the toilet wastes are retained for shore disposal by means of facilities constructed and operated in accordance with rules adopted by the state board of health. "Inland waters" means the waters defined as inland waters by s. 29.01 (4).

SECTION 2. 30.71 (2) of the statutes is repealed and recreated to read:

30.71 (2) No person shall operate any boat equipped with toilets on any outlying waters of this state, as defined in s. 29.01 (4), unless the toilet wastes are retained for shore disposal by means of facilities constructed and operated in accordance with rules adopted by the department of health and social services. This subsection shall not apply to boats engaged in international or interstate commerce.

SECTION 3. EFFECTIVE DATES. SECTION 1 of this act shall take effect on January 1, 1971. SECTION 2 of this act shall take effect on January 1, 1970.

---

*Section 990.05. *Wisconsin Statutes*: Laws and acts; time of going into force. "Every law or act which does not expressly prescribe the time it takes effect shall take effect on the day after its publication."

Attachment F

(No. 124, S.)

CHAPTER 146 LAWS OF 1969

AN ACT

AN ACT to amend 29.60 (5) (c); to repeal and recreate 29.29 (4); and to create 15.191 (2), 15.195, 94.69 (8), (9) and (10), 140.05 (15) and 140.77 of the statutes, relating to the use of pesticides, creating a pesticide review board, and granting rule-making power.

The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:

SECTION 1. 15.191 (2) of the statutes is created to read:

15.191 (2) PESTICIDE REVIEW BOARD. The pesticide review board shall have the program responsibilities specified under ss. 29.29 (4), 94.69 (9) and 140.77.

SECTION 2. 15.195 of the statutes is created to read:

15.195 SAME; ATTACHED BOARDS AND COMMISSIONS. (1) PESTICIDE REVIEW BOARD. There is created in the department of health and social services a pesticide review board. The review board shall consist of the secretary of agriculture, the secretary of natural resources and the secretary of health and social services or their designated representatives.

SECTION 3. 29.29 (4) of the statutes is repealed and recreated to read:

29.29 (4) USE OF PESTICIDES. The department of natural resources, after public hearing, may adopt rules governing the use of any pesticide which it finds is a serious hazard to wild animals other than those it is intended to control, and the making of reports thereon. In making such determinations, the department to the extent relevant shall consider the need for pesticides to protect the well-being of the general public. It shall obtain the recommendation of the pesticide review board and such rules are not effective until approved by the pesticide review board. "Pesticide" has the meaning designated in s. 94.67.

SECTION 4. 29.60 (5) (c) of the statutes is amended to read:

29.60 (5) (c) Nothing in this chapter shall prevent the ~~commission~~ *department* or its ~~deputies~~ *wardens* from using dynamite or having dynamite in possession near beaver houses or dams for the purpose of removing beaver dams when the beavers are causing damage to property owners, ~~nor shall it be unlawful for any person to use poisoned baits, dynamite or poison gas under rules and regulations which shall be prescribed jointly by the commission and the state department of agriculture, for the destruction of injurious insects, rodents or English sparrows.~~ —

(over)

SECTION 5. 94.69 (8), (9) and (10) of the statutes are created to read:

94.69 (8) To govern the conditions under which containers of pesticides may be transported, stored or disposed of.

(9) To govern the use of pesticides, including their formulations, and to determine the times and methods of application and other conditions of use.

(10) The department shall adopt rules when it determines that it is necessary for the protection of persons or property from serious pesticide hazards and that its enforcement is feasible and will substantially eliminate or reduce such hazards. In making such determination the department shall consider the toxicity, hazard, effectiveness and public need for the pesticides, and the availability of less toxic or less hazardous pesticides or other means of pest control. It shall obtain the recommendations of the pesticide review board and such rules are not effective until approved by the pesticide review board. Such rules shall not affect the application of any other statutes or rule adopted thereunder.

SECTION 6. 140.05 (15) of the statutes is created to read:

140.05 (15) Where the use of any pesticide results in a threat to the public health, the department of health and social services shall take all measures necessary to prevent morbidity or mortality.

SECTION 7. 140.77 of the statutes is created to read:

140.77 PESTICIDE REVIEW BOARD. (1) The pesticide review board created by s. 15.195 shall collect, analyze and interpret information, and make recommendations to and coordinate the regulatory and informational responsibilities to the state agencies, on matters relating to the use of pesticides, particularly recommendations for limiting pesticide use to those materials and amounts thereof found necessary and effective in the control of pests and which are not unduly hazardous to man, animals or plants. Pesticide rules authorized by ss. 29.29 (4) and 94.69 are not effective until approved by the review board.

(2) The pesticide review board shall appoint a council not to exceed 6 members of technical or professional experts composed of one representative each from the department of agriculture, department of health and social services, department of natural resources, college of agricultural and life sciences of the university of Wisconsin, water resources center of the university of Wisconsin, school of natural resources of the university of Wisconsin, and in addition 3 public members appointed by the governor and confirmed by the senate for staggered 3-year terms who shall be technical or professional experts in the use of pesticides, one of whom shall be a representative of the pesticide industry, one of whom shall be a representative of the agricultural industry and one of whom shall be a person of broad knowledge and experience in the conservation and wise use of natural resources. The council shall generally assist the review board and shall assist particularly in obtaining scientific data and coordinating pesticide regulatory, enforcement, research and educational functions of the state.

(3) The pesticide review board shall report to the governor and the legislature any pesticide matters it finds are of vital concern for the protection of the health and well-being of people or for the protection of fish, wildlife, plants, soil, air and water from pesticide pollution. Such report may include its recommendations for legislative or other governmental action.

Copied: 12-69

COPY

(No. 163, A.)

CHAPTER 426 LAWS OF 1969

AN ACT

AN ACT to create 134.67 of the statutes, prohibiting the distribution, sale and use of the chemical compound DDT.

The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:

SECTION 1. 134.67 of the statutes is created to read:

134.67 DISTRIBUTION AND SALE OF DDT PROHIBITED. No person shall distribute, sell, offer for sale or use the chemical compound DDT (dichlorodiphenyltrichlorenthane) or any of its isomers except as provided in this section. In subs. (1) and (2) "DDT" includes compounds isomeric with DDT.

(1) For the purposes specified in sub. (2), the secretary of agriculture, the state health officer and the secretary of natural resources shall constitute a DDT emergency board, and any such officer may call a meeting of the emergency board to act under sub. (2).

(2) (a) In the event of the outbreak of an epidemic disease of humans or animals spread by insects which it is known can be controlled by DDT but cannot be adequately controlled by any other known pesticide, the emergency board may authorize the use of DDT in controlling the epidemic upon a finding that:

1. A serious epidemic disease of humans or animals exists;

2. The disease is likely to spread rapidly unless insects which spread the disease are controlled; and

3. The only effective means of control is DDT.

(b) In the event of the outbreak of a plant disease of epidemic proportions which threatens a significant portion of the affected crop and which is caused or spread by an insect which it is known can be controlled by DDT but cannot be adequately controlled by any other known pesticide, the emergency board may authorize the use of DDT in controlling the epidemic upon a finding that:

1. An epidemic plant disease exists;

2. The disease threatens a significant portion of the affected crop; and

3. The only effective means of control is DDT.

(c) The emergency board also may authorize the use of DDT or its isomers or metabolites for specified research by educational institutions if it finds that no ecologically significant residues of DDT or its isomers or metabolites will be allowed to escape into the environment.

(over)

SECTION 2. *RECONCILIATION WITH PENDING LEGISLATION.* If Senate Bill 124 which creates a pesticide review board becomes law, section 134.67 (1) of the statutes, as created by this act, is repealed and references in section 134.67 (2) of the statutes, as created by this act, to the "emergency board" shall be deleted and references to "pesticide review board" substituted therefor.

SECTION 3. *EFFECTIVE DATE.* This act shall take effect on December 31, 1969, or on the day after publication, whichever occurs later.

Copied:
3-69

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
RESEARCH PROJECT REVIEW (6-S FUNDS)
(January, 1970)

1970 - 71
BIENNIUM

PROJECT NUMBER, TITLE, and PRINCIPAL INVESTIGATOR	PROJECT STATUS	BUDGET		STARTING DATE	ENDING DATE	COOPERATING AGENCIES
		ESTIMATED PRIOR COSTS	1970 - 71 PROPOSED			
WSA - BH - 1. The collection of data in reference to public water supplies and the planning of future requirements in this area. Mr. L. Johnson	COMPLETED: Final report being prepared for publication.	$14,000.00	$4,000.00	June, 1965	March, 1969	None
WSA - BH - 2. The study of removal of nutrients, etc., in sewage by sub-surface soil percolation method of sewage disposal. Prof. L. B. Polkowski	COMPLETED: Part of work covered by M. Sc. Thesis. Final report prepared and being typed for circulation.	$20,000.00	None	Sept. 1966	June, 1969	College of Engineerin University of Wisconsin.
WSA - BH - 3. Research in reference to sewage effluent ponds. Prof. W. Boyle	COMPLETED: Report being compiled for typing and circulation in February, 1970.	$29,000.00	$4,030.00	Sept. 1966	Dec. 31, 1969	College of Engineerin University of Wis.
WSA - WP - 1. An economic evaluation of pollution abatement costs in Wisconsin Mrs. K. Micke	COMPLETED: (For pulp and paper industry only) Data on hand. Report in preparation.	$18,000.00	None	Jan. 1967	April, 1969	None
WSA - WP - 2. Automatic water quality monitoring - movable Mr. F. H. Schraufnagel	COMPLETED: Report compiled on 1968 data. Ready for typing and circulation.	$30,900.00	None	Oct. 1966	Dec. 1968	None

SECTION 2. *RECONCILIATION WITH PENDING LEGISLATION.* If Senate Bill 124 which creates a pesticide review board becomes law, section 134.67 (1) of the statutes, as created by this act, is repealed and references in section 134.67 (2) of the statutes, as created by this act, to the "emergency board" shall be deleted and references to "pesticide review board" substituted therefor.

SECTION 3. *EFFECTIVE DATE.* This act shall take effect on December 31, 1969, or on the day after publication, whichever occurs later.

Copied:
3–69

PROJECT NUMBER, TITLE, and PRINCIPAL INVESTIGATOR	PROJECT STATUS	BUDGET ESTIMATED PRIOR COSTS	BUDGET 1970 - 71 PROPOSED	STARTING DATE	ENDING DATE	COOPERATING AGENCIES
WSA - RD - 1. State water resources plan project. Mr. A. R. Striegl	COMPLETED: Final report on file.	$10,000.00	None	Oct. 1967	March, 1968	Mr. A. R. Striegl, Consultant.
WSA - RD - 2. Development of a simulation model for the study of the hydrology of the Wisconsin River basin. Prof. I. Fox	COMPLETED: Final report completed and published.	$25,515.00	None	June, 1967	Oct. 1968	Water Resources Center. University of Wisconsin.
WSA - RD - 3. D.E.P. - U.S. G.S. coop. floodplain delineation. Mr. T. Lee	COMPLETED: Field studies covered Upper Rock River. State computer programmed to process field data. Report due after computer program proves satisfactory.	$47,000.00	None	Oct. 1967	June, 1969	U.S. Geological Surveys.
WSA - RD - 4. Fecal coliform dieoff in sewage treatment lagoons. Prof. K. Crabtree	CONTINUING: Field and laboratory work about 75% completed. Three progress reports on hand. Project to be completed by June 30, 1970.	$16,537.00	$6,000	Aug. 1968	June, 1970	Wausau University Center, University of Wisconsin.
WSA - RD - 5. Taxonomic survey of Wisconsin families, genera & species of plecoptera, ephemeropteria, and trichopteria Prof. W. Hilsenhoff	CONTINUING: Extensive field and laboratory work completed. Three progress reports issued. To be continued in F.Y. 1971.	$23,300.00	$12,551	June, 1968	Dec. 1970	Department of Entomology, Univ. of Wisconsin.
WSA - RD - 6. A study of the movement of waste sulfite liquors from the disposal sites at the Badger Paper Mills at Peshtigo, Wisconsin. Mr. T. A. Calabresa	CONTINUING: Most of field work completed. Data being compiled for report.	$38,000.00	None	June, 1968	June, 1970	University of Wisconsin. Badger Paper Mills

PROJECT NUMBER, TITLE, and PRINCIPAL INVESTIGATOR	PROJECT STATUS	BUDGET		STARTING DATE	ENDING DATE	COOPERATING AGENCIES
		ESTIMATED PRIOR COSTS	1970 - 71 PROPOSED			
WSA - RD - 7. Survey of Pesticide residues in Macro invertebrate benthos organisms. Mr. L. A. Lueschow	CONTINUING: Large number of samples collected and analysed. Data being compiled in preparation of report.	$43,630	None	March, 1968	June, 1970	None
WSA - EP - 1. Aerial Photography of Madison Lakes. Prof. J. Scherz	COMPLETED: Final report on file.	$7,500.00	None	July, 1968	Feb. 1969	University of Wisconsin, Dept. of Transportatio
WSA - EP - 2. Definition of the mixing zone for waste effluent discharged to surface waters. Prof. J. A. Hoopes	CONTINUING: Literature review and one season's field work completed. Three progress reports issued. One more seasons field work being proposed.	$12,820.00	$29,200.00	Sept. 1968	June, 1971	College of Engineering, University of Wisconsin
WSA - EP - 3. Nitrates in drinking water supplies. Prof. K. Crabtree	COMPLETED: Field and laboratory work completed. Final report prepared for publication.	$5,954.00	None	June, 1968	Jan. 1970	Wausau Universit Center, Univ. of Wisconsin
WSA - EP - 4. Augmenting low flows of Trout streams with ground water.	CONTINUING: Project being conducted by the Bureau of Research.	$15,000.00 (Part supplied by the Div. of Envir. Protection)	$7,500.00	June, 1968	Nov. 1970	U.S.G.S. and Bureau of Fish Management.
WSA - EP - 5. Phosphorus removal by using trickling filter systems. Prof. W. Boyle	CONTINUING: Data collected from several operating units and a pilot plant. Progress report due January 15, 1970. Project to be continued in F.Y. 1971.	$7,000.00	$18,500.00	Oct. 1968	June, 1971	College of Engineering, University of Wisconsin

PROJECT NUMBER, TITLE, and PRINCIPAL INVESTIGATOR	PROJECT STATUS	BUDGET		STARTING DATE	ENDING DATE	COOPERATING AGENCIES
		ESTIMATED PRIOR COSTS	1970 - 71 PROPOSED			
WSA - EP - 6. Model of Lower Fox River. Mr. F. H. Schraufnagel	COMPLETED: Final report completed and on file.	None	$23,000.00	Jan. 1969	June 1969	Quirk, Lawler, and Mutusky Engineers.
WSA - EP - 7. Ground water pollution from sanitary landfills and refuse dump grounds - a critical review. Dr. A. E. Zanoni	CONTINUING: Data collected and final report in preparation for submission in March, 1970.	None	$3,090.00	July, 1969	March, 1970	University of Marquette.
WSA - EP - 8. Develop field procedures for depicting movement of liquid wastes in soils. Prof. F. D. Hole	CONTINUING: Extensive field data collected. Compilation of data for report being carried out.	None	$8,500.00 or $15,000.00	July, 1969	June, 1971	University of Wisconsin.
WSA - EP - 9. Terminal residues of chlorinated hydrocarbon pesticides in Lake Michigan, etc. G. M. Boush	CONTINUING: Biological samples collected. Required special equipment being secured and prepared for use.	None	$24,500.00	Oct. 1969	June 1971	University of Wisconsin
WSA - EP - 10. Aerial photography - stereo plotter technique to reduce serveying and mapping costs for flood plain delineation. T. Lee	CONTINUING: First phase aerial photography completed and some basic data collected - Lower Baraboo River.	None	$25,500.00	Nov. 1969	June, 1971	U.S. Corps of Engineers and Mark Hurd Aerial Surveys, Inc.
WSA - EP - 11. Effluent guidelines. F. H. Schraufnagal	CONTINUING: Proposal being considered.	None	$25,000.00	Feb. 1970	Aug. 1970	Roy F. Weston.

MR. STEIN: Are there any comments or questions?

MR. FRANGOS: Mr. Chairman, I would like to just add a few comments to this report that might be of interest to the conferees and to the public here today.

On the construction grants program, we estimate about $80 million of construction will get under way; this is a Statewide figure, and we anticipate that over half of that will be in the Lake Michigan Basin.

Another item of interest to the conferees, you may be interested to know that as a followup to President Nixon's Executive Order on Federal installations Governor Knowles did likewise for State installations. We don't have any particular problems here in the Lake Michigan Basin, but we are following through to see if there may be some small installations that we have not picked up. But this is a prominent program and the State budget that is now in preparation will reflect any needs for correction at the State institutions.

A word about oil pollution. You probably are aware, Mr. Stein, that through the cooperative efforts with your agency on the upper Mississippi River we have developed a rather detailed oil pollution emergency plan that has just been completed and this has been developed as a working procedure for that area in our department. We feel one of the payoffs on reorganization in our Department of Natural Resources is that we can put many of our wardens and fish managers and game managers out in the field as eyes and ears. We think we have got a pretty good system developed and we are anticipating following through in considerable detail here in the Lake Michigan Basin.

One item that I should bring to your attention relates to the Milwaukee Metropolitan Sewage Commission and the requirement for providing chlorination. Now, the Sewage Commission, and more specifically at the Jones Island Sewage Treatment Plant, does not now provide chlorination. An early estimate of the cost for providing chlorination facilities, and the majority of the cost was involved with building a holding tank, the preliminary estimates were around $6 million for providing chlorination. Because of budgetary limitations, it was requested of our agency that an alternative method of providing chlorination be considered at the Jones Island plant. And very briefly, it provides for applying chlorine at the effluent troughs at higher dosage than normally given and at shorter contact periods.

On the basis of the proposal that the Commission made to our agency, we agreed to go along with their experimentation to see if this was feasible and a tentative schedule that was worked out with the Commission was that they would conduct a series of tests to see whether this was at all feasible. We have had two reports submitted by the Commission that appear rather promising to us. The last report was received several weeks ago.

The schedule that they have submitted to us is that they would continue this study to develop chlorination curves, and more specifically on three, five, seven, and fifteen-minute detention times; these curves would be in relation to concentration of chlorine and establishing a concentration time in relation to bacterial kills. If this proves satisfactory, then the item to put in chlorination would be put into the September 1970 budget of the Commission and construction would be completed in 1971. The difference in capital cost is roughly about $6 million weighed against $500,000 with this alternate procedure that we are talking about now.

This proposal has been transmitted to the Chicago regional office and they are aware of it and we bring this to your attention at this time.

MR. STEIN: Are there any comments or questions?

MR. KLASSEN: I have one question, Mr. Chairman.

Referring to the two nuclear powerplants, what type of approval or permits did the State of Wisconsin give and did you hold public hearings on these? My reason for asking, before the next session of this enforcement conference the State of Illinois will be confronted, I am sure, with this question in connection with the proposed plant at Zion. I am wondering whether you issued operational permits, construction permits, and again did you hold public hearings in connection with the issuance of such permits?

MR. FRANGOS: The answer to the second question is no, we did not hold public hearings. The law does not require us to do so on any kind of a discharge. We reviewed the proposals administratively in the agency, one for the domestic wastes, which is really a minor problem, and secondly for their radioactivity considerations and the thermal considerations. The proposals that came before us in our judgment meet the existing water quality standards and we have given our approval on this basis.

MR. STEIN: Are there any other comments or questions?

MR. PURDY: I have one question, Mr. Stein.

On your construction grant program, Mr. Frangos, you indicate that while you have a program of about $80 million this year, and along in the 1971-1973 biennium new construction starts totaling in excess of $100 million, but yet you have indicated your, say, allotment in the way of construction grant money from Federal sources about $17.1 million. This would indicate to me that there is quite a gap here that exists in the amount of Federal funding that the projects are eligible for. Is this being made up now with State funds or how is this going forward?

MR. FRANGOS: Yes. Well, this is our State construction grant program, which I think parallels the Michigan program, whereby there is an outright grant of some 25 percent. Additionally we can prefinance the Federal grant.

MR. PURDY: But without this additional funding, if you keyed your program to the level of construction grant funds received from Federal sources you would be limited to roughly a $34 million a year program?

MR. FRANGOS: Well, we need the Federal money at this level, that is right.

MR. PURDY: Yes.

MR. STEIN: Any other comments or questions?

MR. MAYO: I have one.

MR. STEIN: Yes.

MR. MAYO: In looking at the appendices in the report, we notice that there are some 13 or 14 dates for discharges for which the dates for disinfection have been extended, anywhere from several months to over two years for Milwaukee.

Could you speak to that?

MR. FRANGOS: Well, I think I have spoken to the Milwaukee situation.

At the other communities there is a question of whether they had chlorination that had to be stepped up year-round or either there was no chlorination, and in view of the time consideration between when we got our standards set and the conference we have just slipped behind on those.

MR. MAYO: It seems to me that the requirements for providing the facilities for adequate disinfection are generally pretty minimal in terms of investment and in terms of the technical difficulties of providing disinfection. Really it has been a rather long time on a number of these.

MR. FRANGOS: I think a number of them are rather small communities and they don't view it as being minimal. Now, one thing that we have done in recognition of this problem is that we have provided in our bonding program a specific sum for these small projects and these monies are now available and it seems to me that now that there are no excuses for delay.

MR. MAYO: One other point, Mr. Chairman. I notice that the extension that was given to Milwaukee from May of 1969 to December of 1971 was apparently a unilateral action on the part of the State and this is something that the conferees have not had an opportunity to address themselves to. I raise the point here to invite from the other conferees some comment as to either the reasonableness of the extension or the appropriateness of a unilateral extension on the part of the individual States when it discharges directly into Lake Michigan.

MR. STEIN: Let me get at that a little bit later. O. K.?

MR. MAYO: All right.

MR. STEIN: With your report--and I read something to you at the beginning--I don't know that I have to repeat this to everyone; but since you are first, Mr. Frangos, do you think we can take your list? It looks to me as if this is a relatively easy job to get that into the interim steps for compliance, which the Department says they would like to have, that is, the retention of engineers, preliminary engineering report, initiate detailed engineering plans and specs, submit detailed engineering specifications, arrange financing, initiate construction and complete construction. Do you think if we put any people to work with you, or you yourself, that we can get the format of that completed in about a month?

MR. FRANGOS: You mean--

MR. STEIN: On your list.

MR. FRANGOS: Yes, I think that is no problem at all. We did go through this process with the regional people about 60 days ago. I don't know, we covered those six or seven items in that way, but we can give it to the conference in that form.

MR. STEIN: I don't want to repeat this because I would have to bring this up with all the conferees, but I do think that the States can almost do that themselves, with the reporting we have got here, without this.

Let me go back to this disinfection again. Lack of disinfection is also in violation of the Wisconsin standards as approved by the Secretary, isn't it?

MR. FRANGOS: The standards, in our submission of the standards we included a timetable and that timetable had a 1969 date, that is correct.

MR. STEIN: Yes, and that we approved.

I think we are faced, as I see it, with this problem. And by the way, you are not unique, because at least some of the people from Chicago are here and I think probably Mr. Klassen recognizes this. For one reason or another you recall that when you were in the Calumet conference it took, I think, two years to design a baffle in Chicago to handle the disinfection, which they said they had to do physically and this is the kind of stuff you run into.

But the point is, if we are dealing with reducing the pathogens and your bigger city is two years behind; and we have no assurance that you are going to go to the new system yet, and the reason for doing this is that the difference in cost between $500,000 and $6 million is this capital investment or operating costs?

MR. FRANGOS: No, it is capital.

MR. STEIN: But the operating costs would be more for the $500,000.

MR. FRANGOS: That is right. That is right.

MR. STEIN: It seems to me we really have two alternatives. Either we are going to have to work to get these interim dates set, as I indicated before, or else it seems to me that by this action you are subjecting your communities both large and small, Milwaukee is the largest, to the 180-day notice. Since the conferees did not act on the extensions, I am not going to ask them to ratify a unilateral extension that you gave.

In other words, as far as I can see under the law, if the Secretary wishes we can issue a 180-day notice against Milwaukee, and if they don't have a plan for disinfection we can take them to court.

MR. FRANGOS: We recognize that.

MR. STEIN: All right. I say this because I think this is the trend at this point. As far as I can see, Milwaukee and these other communities that Mr. Mayo alluded to are in clear violation of the conference recommendations and the standard requirements submitted by Wisconsin and approved by the Secretary.

MR. FRANGOS: Well, I think we have given you the story on Milwaukee. One other factor that I think you know and your people know is that, of course, we have been chlorinating at the new plant, at the South Shore plant.

Secondly, the critical reason from the budgetary point of view is the fact that there are some major repairs that have to be done to the Jones Island power-plant and this was the choice that had to be made, which represents a substantial investment.

I think we have notified your Chicago office because they have raised the point in connection with construction.

MR. STEIN: Yes. By the way, Mr. Frangos, I want to say I recognize the problem.

MR. FRANGOS: Fine.

MR. STEIN: Let me give you the facts as I see them.

I know that Wisconsin has a very good program. The trouble is no one really gets any credit when they comply with the law. I know I never do.

But the point is that the biggest city in your State, Milwaukee--one that discharges into Lake Michigan; the water that we have a real high priority to protect--is in clear violation of this conference recommendation. They are more than two years late on disinfection of the effluent,and the lack of putting out that disinfection means that pathogens go into the lake.

Now, these are the bald facts as I see them.

MR. FRANGOS: At the same time, this is the largest community in the Great Lakes that is now providing phosphorus removal.

MR. STEIN: Again, if you point out that you are complying with the law in some respects, I don't know how many--

MR. FRANGOS: I understand it doesn't go to the issue.

MR. STEIN: I don't care how many Brownie points you get. (Laughter.)

The issue is, if you are putting out germs in the lake, you are putting out germs in the lake. This is the problem. Chicago can argue the other way by saying we are keeping the lake completely clean; by reversing the Chicago River, we are keeping the water out and we got a little more time to work on phosphorus removal. The point is while we were sitting around, here was the issue. Maybe you don't have it here, but we sweated that one out in Chicago. I know Mr. Klassen is here and I think Vinton Bacon is in the audience. For several years, we had a question going on this chlorination of whether or not we were going to close the beaches during these long hot summers because of the pathogens or we were going to keep them open. We were really close. This was just accidental and just geography, but the beaches that were most critical were the beaches in the black neighborhoods and we had a real, real problem summer after summer. The fortunate thing is we sweated through that and we got through it. We kept those beaches open in Chicago.

I ask you to look at the priorities. You talk about your phosphate removal. But the question you people in Milwaukee should ask yourselves is: Do you have any beaches closed where people can't swim?

MR. FRANGOS: None are closed because of lack of disinfection at the Jones Island plant. The reason beaches are closed in this area is because of combined sewer overflows and the budgeting structure of the Commission was such that a substantial part of that went into building relief sewers.

MR. STEIN: I recognize that. But the point is we all recognize this problem of combined sewers. You can take this for what it is worth. In my opinion, we are not going to get to this combined sewer problem, really face up to the financing, until we lick some of our more mundane problems, such as disinfecting the effluent from a standard waste treatment facility. The reason that the conferees set that tight date in 1969 was that they did not think this problem would be that complicated. As we recognized, we had pretty complicated problems with combined sewers. We had pretty complicated problems with phosphate and other nutrient removal. The point is we didn't recognize that the disinfection of the effluent would be a complicated problem.

As I see it--and I think Mr. Mayo put a finger on it--if you have had a unilateral extension of numerous disinfection schedules throughout your State, some small communities, it seems to me no wonder if your biggest community is two years late, that this has got to be reflected through the State program. And I think we just have to look at this, because we were asked to come up to Milwaukee and this may be the reason why we are here. It seems to me this is the most flagrant violation of the schedule that we have in the Lake Michigan area now.

MR. FRANGOS: Well, that may be--

MR. STEIN: The largest city in the State is not disinfecting its effluent.

MR. FRANGOS: Let me comment or respond to that, Mr. Chairman, that although this may be mundane in one sense, the real problem in this community as far as improving water quality and the small streams that run through the city and the county and the real problem as to whether you are going to open up beaches or close them is the combined sewer problem. And that is the problem that we have to face here in the county. I would add that this is the thing that distresses me most and I have some very serious reservations about whether we are going to meet the standards and see a significant clean-up of regional waters unless we get at the combined sewer problem, because as I indicated to you, the beaches are not being closed because we are not disinfecting.

MR. STEIN: Mr. Frangos, I couldn't agree with you more and Mr. Purdy has talked to me about the same thing. I think combined sewers are the issue and a significant issue. But let me tell you, when I argue your case, and your case is my case in Washington, I get short shrift when you are having a problem of self-help and the cities haven't done what is humanly decent. What we have asked for them to do in 1969 is disinfect their effluent and not put any bugs into the lake. Now, this isn't a big thing to ask.

MR. FRANGOS: Well, it is $6 million worth, Mr. Stein.

MR. STEIN: That is right, $6 million worth. And you know, we have put this out over and over again. Talk about what the people in Milwaukee pay for their electric bill, their gas bill, their automobiles, and when you relate that to $6 million worth I think it begins to fall into perspective. I don't think this is a big big thing when we are talking about the addition to what each family has to pay.

MR. FRANGOS: Well, I have no quarrel with that statement. The other response I would make is that this means that we really are not spending enough money in this area and we have got to be spending a lot more.

MR. STEIN: Yes, and who has to be spending it? This is the point, Mr. Frangos. If the people in the area feel perfectly comfortable paying $30 a month for an electric bill and $20 a month for a telephone bill and get excited when they have to pay $5 or $6 for a water bill and treat their effluent, we are going to still be in trouble, and this is the basic problem. And I think we have to look in terms of $6 million and what it means in that sense.

MR. FRANGOS: That is right.

MR. STEIN: All right.

MR. KLASSEN: Mr. Chairman.

MR. STEIN: Yes.

MR. KLASSEN: What percentage of the total sewage flow in Milwaukee does this represent? What are we talking about, half, a quarter?

MR. FRANGOS: This would represent the majority at this time.

MR. KLASSEN: You mean a majority of the sewage from Milwaukee is not chlorinated?

MR. FRANGOS: That is what I have been saying, yes.

MR. KLASSEN: We are going to chlorinate combined sewer overflow in Illinois this year. I hope it doesn't get down there.

MR. STEIN: Mr. Klassen, I think that is why we are here. I think this is the area of the program, and I think you can appreciate this, which is completely out of kilter with the progress made in, for example, Illinois.

We are talking in Illinois about chlorinating the stormwater, not domestic sewage, and when you have most of the large city here going in unchlorinated, it seems to me a glaring discrepancy in the uniform treatment of wastes going into Lake Michigan and I would just ask the people here to really, really give that serious consideration.

Are there any other comments or questions?

MR. KLASSEN: Just a question of what volume are we talking about, how many gallons per day when related to what we are--

MR. FRANGOS: Two hundred MGD.

MR. KLASSEN: Two hundred million gallons a day.

MR. FRANGOS: Secondary treatment, of course.

MR. KLASSEN: But no phosphate removal?

MR. FRANGOS: Yes, phosphorus removal.

MR. STEIN: All right, it is not easy to shock this panel, but you managed.

I said it is not easy to shock these conferees, but you have managed.

All right, are there any other questions?

If not, thank you very much.

Do you want to call on your other people, Mr. Frangos?

MR. FRANGOS: Yes.

Next is the representative from the Wisconsin Ecological Society.

JOHN F. WILSON, DIRECTOR
WISCONSIN ECOLOGICAL SOCIETY
GREEN BAY, WISCONSIN

MR. WILSON: My name is John Wilson and I am a Director of the Wisconsin Ecological Society in Green Bay.

Speaking of beaches and closed beaches, I would like to draw attention to I think one of the two permanently closed beaches on Lake Michigan which exist in our fair city. We have 25 to 30 active members comprised of various scientists, including physicists, limnologists, chemists, ecologists, as well as lawyers, accountants, and various businessmen. We have extensively studied problems of environmental degradation in our State for the last four years. We have made numerous suggestions formally and informally to the various responsible agencies.

Parenthetically, some of us have wondered why, when as taxpayers we have funded both Federal and State agencies to protect our environment, it has been necessary to spend additional time and money as private citizens to assure that this protection does in fact exist.

We believe that when value judgments are made by the various agencies the public interest is not always held foremost or that the judgment presumes a benefit to the public not in keeping with ecological principles, resulting in an ultimate cost to the public out of proportion to the alleged benefits.

Specifically we feel that the classification of the Lower Fox River in Wisconsin by the DNR or its predecessor agency to an industrial cooling stream category is a case in point. We feel that the Corps of Engineers in allowing the Fort Howard Paper Company to fill in the Fox River behind a new bulkhead line without a public hearing was not acting in the public interest. We feel that both the FWPCA and the Wisconsin DNR share responsibility for permitting the nuclear powerplants on the shores of Lake Michigan to discharge large amounts of hot water together with radioactive wastes into the waters of Lake Michigan.

Unless the rivers with their pollutional load are upgraded, the hope for upgrading Lake Michigan is an impossible dream. According to a number of experts, lower Green Bay is already a Lake Erie.

Now, I would like a clarification, if possible, from this conference. We have been informed by members of the FWPCA staff that the Federal Government views Green Bay as a problem existing for Michigan and Wisconsin, with an imaginary line drawn from Rock Island to Menominee, that it would be necessary to demonstrate that a specific pollutant crossed that line before the Federal Government could act. This relates strictly to enforcement. The Society views this as absurd.

MR. STEIN: Let me straighten that out. Green Bay is included within the purview of this conference. I don't think we or the Federal Government or Wisconsin dispute the jurisdiction of that. So you can go ahead. They are reporting that.

MR. WILSON: All right.

In 1966 the FWPCA made a comprehensive report on the Green Bay Basin, the parameters of which were excellent and in which the problems were discussed in depth and recommendations were made. The polluters were identified together with their contributions, a pilot model of the Fox River was created, and reductions in loading were requested.

The paper mills constitute the largest single source of pollution to Green Bay by far. The recommended FWPCA numbers were 76,475 pounds of 5-day BOD per day from the Fox River mills. Now, these were the recommended, I believe, 1972--there was a 1972 dateline. We feel that the FWPCA was too generous and we will not save Green Bay with this sort of loading. We must deduct from these totals, however, 15,500 pounds allowed to Kimberly - Clark in Kimberly, as that mill's pulp operation was recently shut down. So we then have a total of 60,975 pounds.

Recently the Wisconsin Department of Natural Resources issued new orders to the mills on the Fox River calling for a reduction to 87,065 pounds per day total from the mills. We are asking the FWPCA to inquire why the discrepancy exists and when a reduction to at least--

(At this point, the speaker was interrupted because a table was accidentally upset.)

MR. STEIN: Let's have a 10-minute recess.

(RECESS)

MR. STEIN: Let's reconvene.

Would you continue.

MR. FRANGOS: Mr. Chairman, our apologies to Mr. Vanlandingham, and I just offer the comment we don't mean to inhibit any future comments.

MR. WILSON: Seeing that he has called me Mr. Vanlandingham, I assume that I didn't make too much of an impression on him.

MR. FRANGOS: I know your group well, sir.

MR. WILSON: We feel that the FW--well, let me see. Here we are. All right.

We then have a total of 60,975 pounds. Recently the Wisconsin Department of Natural Resources issued new orders to the mills on the Fox calling for a reduction to 87,065 pounds per day. We are asking the FWPCA to inquire why the discrepancy exists and when a reduction to at least 60,975 pounds 5-day BOD from the mills will be implemented.

The Fort Howard Paper Company recently indicated that they would reduce their discharges by 90 percent. If this is possible for them it should be possible, through one sort of technology or another, for the others and we are formally requesting this conference to ask Wisconsin to demand that all the mills live up to the state of the art and reduce their BOD and suspended solids loadings by 90 percent. These are the levels expected of the municipalities and should be demanded of industry as well. The present levels are 276,740 pounds. We ask for 27,674 pounds and a comparable reduction in suspended solids.

We view the permission to allow the nuclear powerplants to dump their hot water in Lake Michigan as a violation of the intention of both Federal and Wisconsin law. No one can say, accepting the fact of thermal bar and the current movement in the lake, that hot water will in fact mix completely in the lake. Shore areas likely will be affected to a larger extent than the entire lake. The concept of mixing zones must be restudied while asking if they are established in the public interest or for some other reason. There are many menacing unknowns. If we see a scientist take one position on hot water, another can be found to take the other. The effect of hot water on other forms of pollution, fish, aquatic life, and algae might be substantial. It would seem minimally prudent to restrict these discharges until more is known about the effect.

We pose a question: If the AEC is wrong and tritium not only concentrates in the biological chain but causes harm once it does, who will have the responsibility of dealing with a hopeless Lake Michigan, the AEC or the FWPCA? The DDT disaster must make us aware that we can guess wrong. If we are wrong on the deliberately discharged radionuclides from the nuclear powerplants, we will have a mess by orders of magnitude worse than the DDT situation.

We request that you err on the side of prudence and care.

Thank you. (Applause.)

MR. STEIN: Thank you.

Are there any comments or questions?

MR. FRANGOS: I have none, sir.

I guess I will defer at this point because Mr. Klassen of Illinois has several people that he would like to have put on.

MR. KLASSEN: Mr. Chairman, the Illinois presentation will take its regular time tomorrow.

However, we have two ladies here from Illinois. I am responsible for saying that they probably would be on this afternoon and they cannot be here tomorrow.

If with the leave of Wisconsin we could have just a few moments to allow these ladies to appear to make very short statements, we would appreciate it very much and then we won't discuss these. I will answer any of the questions that they raise in my presentation tomorrow.

MR. STEIN: Right. Go ahead, Mr. Klassen.

MR. KLASSEN: The first is Mrs. Schnanig, who represents the League of Women Voters of Glencoe.

I am going to say, Mr. Chairman, I wasn't unduly influenced by League members, even though my wife is the local water resources chairman of the League from Springfield.

(Laughter.)

Mrs. F. Schnanig

FRAN SCHNANIG
LEAGUE OF WOMEN VOTERS
GLENCOE, ILLINOIS

(The following statement was read by Mrs. Schnanig:)

League of Women Voters
of Glencoe, Illinois
379 Jackson Avenue
Glencoe, Illinois 60022

March 31, 1970

STATEMENT BEFORE
FOUR-STATE ENFORCEMENT CONFERENCE
ON POLLUTION OF LAKE MICHIGAN

The Glencoe League of Women Voters, one of the 75 Leagues participating in a Lake Michigan study, is vitally concerned with the question of scheduled water pollution control of Lake Michigan. As concerned citizens, as lakeshore residents, we wish to emphasize one important factor in the equation of pollution control: that is, the time factor.

Lake Erie, which we all know as "a classic case of degradation..."[1] flushes out every 5 years.[2] But Lake Michigan "takes hundreds, perhaps thousands of years to cleanse itself."[3] The process of eutrophication has already begun in Lake Michigan.[4] And if we delay, if we fail to gear our actions to the requirements of the clock, then the question of pollution control confronting us here today will have become meaningless; for our lake will have died unattended while we labored to find a perfect cure.

Accordingly, the Glencoe League of Women Voters poses the following questions which we believe must be answered if the inevitable timetable of eutrophication threatening Lake Michigan is to be revised and, hopefully, reversed.

1. Can this Four-State conference again press for immediate Federal funding to provide the necessary onshore areas for polluted dredgings by the Army Corps of Engineers?

2. Are Federal funds for pollution control

available immediately? If not, what is the time lapse? If there is a delay in Federal funding of the North Shore Sanitary District, how can the funds be obtained more quickly?

3. Can the State of Illinois better fund the Illinois Sanitary Water Board to assure adequate monitoring of the water quality of Lake Michigan?

4. The North Shore Sanitary District is reported to be nine months to one year behind schedule in constructing some of its new pollution control facilities because of private citizen court actions against the construction projects. Is it possible to speed up the litigation process? Can we have help here from the Illinois Attorney General? Can the courts give top priority to expediting cases involving polluters (since these cases often take so much time)?

5. In view of the existing overload of the North Shore Sanitary District facilities, is it possible to have a moratorium declared on the building of new housing and industrial developments in the area until the present waste can be effectively treated?

6. If the North Shore Sanitary District is

unable to complete its proposed construction projects, will we be faced with Lake County's effluent continuing to go directly into Lake Michigan?

7. Will the Federal Government immediately implement E.O.11507 and insist that the Great Lakes Training Center and Fort Sheridan meet State and Federal standards for Lake Michigan and that their facilities be operated by personnel meeting the requirements of Illinois certification?

8. We are concerned with taste and odor problems which are peculiar to the water intake in our area. If Abbott Laboratories (whose suspended solids discharge is in violation of State standards)[5] is the source of this problem, as has been unofficially reported, what immediate steps can be taken to assure that Abbott Laboratories will indeed comply with the effluent criteria?

9. The Waukegan Works of U. S. Steel Corporation has incurred violations of the State of Illinois effluent criteria. Although the company has pledged partial compliance by June 1970, still, two of its violating outfalls are apparently going to continue to discharge large amounts of iron and spent acids into Lake

Michigan.[6] Can the four-State conference press for cessation of this pollution?

And we would like to pose three more general questions pertaining to the timetable for well-scheduled pollution control in Lake Michigan:

1. Does the dilution of contaminants actually make them less contaminating?

2. Will this conference be conducting a study of the effects on water quality due to landfill, involving not only the proposed airport in the lake, but also any other landfill projects?

3. In view of the sparse and conflicting scientific information on the effects of pollution from nuclear powerplants, can we slow down the construction of the Zion plant until there is adequate knowledge?

In Glencoe, we share, with all lakefront communities, the beauty of Lake Michigan. We use the beaches and the water; often we simply watch the waves break. Pollution as the result of ignorance is by now, not excused by local, State or Federal agencies. Pollution as the result of delay can no longer be tolerated.

- - -

(Applause.)

Mrs. F. Schnanig

(Footnotes to the above statement:)

[1] Kohn, Sherwood Davidson, "Warning: The Green Slime is Here," The New York Times Magazine, March 22, 1970, p. 52.

[2] idem.

[3] idem.

[4] Stoermer, Dr. E. F., "Plankton Diatom Assemblages in Lake Michigan," Press Release, Feb. 10, 1970, FWPCA, Great Lakes Basin Region.

[5] "Report on Effluents from Abbott Laboratories, North Chicago, Illinois, January 15, 1970," FWPCA, Great Lakes Region, Lake Michigan Basin Office.

[6] "Report of Investigation of Effluents from U. S. Steel Corporation Waukegan Works, Waukegan, Illinois, February 19, 1970," FWPCA, Great Lakes Region, Lake Michigan Basin Office.

- - -

MR. STEIN: Thank you.

Do you want to wait up there a moment?

I will answer some of the Federal questions while you are here, and if Mr. Klassen wants to wait until tomorrow for the State, that is fine.

Mrs. F. Schnanig

Question 1, "Can this four-State conference again press for immediate Federal funding to provide the necessary onshore areas for polluted dredgings by the Army Corps of Engineers?"

As you know, we have been working through the years and I guess you can say for Mr. Klassen that he has been as active in this as anyone, and I share this with very few people of being active in getting polluted dredgings out of the lake. I will say that Mr. Klassen has been as active as anyone trying to get these polluted dredgings put within onshore diked areas. As has been indicated this morning, we hope to have something worked out with the Corps of Engineers for this period, but as in this and many other of your questions, funding is dependent upon the action of the Congress.

As I have said many times, we are not here with this multimillion dollar program or several billion dollar program to clean up Lake Michigan just to make it available for a dump. This is not our purpose. And we hope to move on that, but as you recognize in the water field, all these questions are complicated. I don't mean this as a ducking operation, but you have to and the

League has to keep watching.

"Are Federal funds for pollution control available immediately?"

The answer to that is generally yes. Now, we have had this year appropriation of $800 million dollars and an increase over last year of $214 million dollars for construction grant funds. The President has recently announced a $4 billion Federal financing, $10 billion total program for the increase. We would hope that this would receive favorable consideration from the Congress. If it does, the funds will be made available as soon as the Congress makes them available and if this is so we make every effort to get these out to the State as soon as we can.

Now, I am going to skip down to some of your other questions. Question 7 about whether the Federal Government will immediately implement its Executive Order and insist that the Great Lakes Training Center and Fort Sheridan meet State and Federal requirements. The President recently announced that both Great Lakes Training Center and Fort Sheridan would meet these and he also set aside specific money--not only said they would do it, but he provided the money to do this, so I think we are on our way.

You have two questions here about Abbott Laboratories, and the Waukegan Works of the United States Steel Corporation. We will listen to Mr. Klassen and others who wish to talk on these problems and if we are not satisfied that Abbott Laboratories and the Waukegan Works of U. S. Steel are meeting State and Federal standards or that the State is taking appropriate action, I am sure we will consider 180-day notices against those companies. But I don't want to prejudge this. We have to listen to what the State is going to do and if representatives from these industries are here what they are doing before we make a judgment.

That deals with the Federal answers.

Mr. Mayo points out that,"Will the facilities be operated by personnel meeting the requirements of Illinois certification?" I know the States love this kind of thing. I think that our people should at least meet the requirements, Federal people, of State certification. However, this is a very, very difficult philosophic problem. You know, we used to be in the Public Health Service and we would get material such as the State of

Texas wanting the doctors working for the Public Health Service to be licensed in Texas, otherwise they couldn't work there. The position that the Federal establishment has maintained all the time is that we cannot, as a philosophic operation, and again considering the powers and the functions of the Federal Government, considering the war powers and all the other powers, make Federal officials subject to State certification and order them to carry out their profession. However, in principle--rather, in substance I agree that they should have at least the requirements of a State operator before they would operate the plant or we are not going to do it. But I ask you to appreciate the more involved aspects of the problem on the broad question of whether we can submit a Federal professional person to State certification.

MRS. SCHNANIG: Thank you.

MR. STEIN: Are there any other comments?

Mr. Klassen?

MR. KLASSEN: My presentation will be tomorrow and other discussions, and if there is any further discussion that answers to the question I will furnish it to the ladies, but they all will be answered.

And incidentally, this is the only presentation. The other people have deferred until tomorrow.

And I want to thank Wisconsin for letting us use this time and also thank the Glencoe League and Mrs. Schnanig.

MRS. SCHNANIG: Thank you.

MR. STEIN: Thank you very much.

MR. FRANGOS: Is that all?

Is there a representative from the Wisconsin Electric Power Company here?

KENNETH LEHNER
SUPERINTENDENT OF CHEMICAL SERVICES
WISCONSIN ELECTRIC POWER COMPANY
MILWAUKEE, WISCONSIN

MR. LEHNER: My name is Kenneth Lehner. I am Superintendent of Chemical Services for the Wisconsin Electric Power Company and I am going to read a statement from Mr. Sol Burstein, who is the Senior Vice President of the Wisconsin Electric Power Company.

(Which said statement is as follows:)

THIRD
[illegible]H SESSION OF CONFERENCE
POLLUTION OF LAKE MICHIGAN
AND ITS TRIBUTARY BASIN
(WISCONSIN-ILLINOIS-INDIANA-MICHIGAN)
March 31, 1970.

Statement of Sol Burstein,
Senior Vice President of
Wisconsin Electric Power Company

My name is Sol Burstein. I am Senior Vice President of Wisconsin Electric Power Company, the parent company of an investor-owned utility system, providing electric, steam and gas services in eastern Wisconsin and parts of upper Michigan.

The parent company, Wisconsin Electric, serves an area of 4,015 square miles located in 15 counties in southern and eastern Wisconsin.

A subsidiary, Wisconsin Michigan Power Company, provides electric service in an area of 2,533 square miles located in 12 counties in east central and northeastern Wisconsin, and 6,090 miles located in 11 counties in the Upper Peninsula of Michigan.

Another subsidiary, Wisconsin Natural Gas Company, is engaged in the distribution and sale of natural gas in an area of approximately 1,730 square miles located in 8 counties in southeastern Wisconsin.

The service areas of the electric and gas utilities are shown on exhibits attached to this statement.

At the end of 1969 our combined system provided electric service to 673,200 customers and gas service to 144,800 customers. Almost 700 customers in downtown Milwaukee purchased central district steam from the parent company.

Wisconsin Electric Power Company owns and operates six fossil fueled electric generating plants in Milwaukee and Ozaukee Counties, comprising a total of 2,720,000 kw. Wisconsin Michigan Power Company has one steam plant in Appleton with a capacity of 20,000 kw and sixteen hydroelectric plants in Wisconsin and Michigan with an installed capacity of 90,589 kw.

Wisconsin Electric Power and Wisconsin Michigan Power are presently building the Point Beach Nuclear Plant at Two Creeks, Manitowoc County, Wisconsin, which will include two pressurized water reactor units of 497,000 kw each. Unit 1 will be placed in service in 1970 and Unit 2 in 1971.

The Wisconsin Electric Power Company system is the largest electric utility in the State of Wisconsin; and, due to the nature of its generating plants, it is one of the major non-consumptive users of lake water for cooling purposes. In June of 1966, Governor Warren P. Knowles convened two conferences on Lake Michigan pollution. I presented some facts concerning electric power plants at the Governor's conference in Milwaukee on June 28, 1966. My remarks are included in the proceedings of those conferences and are basically as applicable today as they were four years ago.

I should like to re-emphasize a few observations and recommendations concerning the objectives and proposals of this

Four State Lake Michigan Conference.

1. An adequate and reliable electric power supply is vital to this region and to the nation and electric utilities must have the use of adequate sites for power plants needed to meet these requirements for generation of electricity. Because of fuel transportation limits, plant locations along waterways are desirable. Because of the thermodynamics involved in the process of generating electricity, locations along substantial water courses are essential, since no acceptable alternatives are available.

2. Electric utilities are facing increasing competition for plant sites because land resources are limited and the ingredients of a good location for electric generation makes available land also attractive for other uses. We agree that the problems associated with power plant locations concern federal and state regulatory agencies having responsibilities in regard to electric power supply and also concern agencies having responsibility for environmental quality. These are not necessarily mutually conflicting concerns, and in the total public interest they must receive appropriate consideration and, if necessary, compromise.

3. We believe that power plants will have to be constructed on lake sites, and we believe they can be built to meet reasonable limitations set by the states or by the Department of Interior - Water Pollution Control Administration.

Insofar as thermal effects are concerned, changes to the waters of Lake Michigan as a whole due to warm water discharges from all sources, including power plants, are non-existent. We are all cognizant of the fact that excess heat resulting from thermal water discharges is eventually transferred to the atmosphere by radiation and evaporation. If there is an area of concern, then it must be the area or zone immediately adjacent to the point of discharge. This mixing zone is a limited area in which dispersion and blending take place and where some changes may be expected in the event of prolonged exposure by immobile aquatic elements. From measurements taken at existing plants along Lake Michigan and from studies already performed at the Point Beach Nuclear Plant, we know that heat dissipation is very rapid. We anticipate that the maximum distance that any temperature increase could be detected is in the order of 3500 to 5000 feet from the point of discharge.

Along with other observers, we have come to know that the warmer water discharged, quickly forms a thin surface layer and there is essentially no temperature change a few feet below the surface. About 70% to 80% of the area covered by this plume of warmer water is from 2° to 5° above the ambient water temperature. Temperature measurements at the Point Beach Nuclear Plant site taken over the last two years to obtain thermal data for this particular area prior to placing the plant in service, indicate that the natural temperature changes in a relatively few days in August and September of 1969 were greater than 20° due to variations in wind, lake conditions and cloud cover. Even greater temperature changes occur naturally between summer and winter when the shallow lake areas shoreline summer temperatures may be as high as 60°, compared to freezing conditions of 32° and below in winter.

I am sure this Conference is aware of a recent statement from the Federal Water Pollution Control Administration indicating that the heat input from all present power plants on the shores of Lake Michigan would not raise the overall lake temperature more than one-tenth of 1°, and that even this minute effect would be nullified during the following winter season. I believe this Conference is also aware that the heat energy absorbed by Lake Michigan waters from the sun is many times greater than any man-made influence, and that records started some hundred years ago indicate that the average temperature of Lake Michigan has shown a natural decline. It is now about 2° cooler than a century ago, despite substantial increases in thermal discharges due to population and industry located on its shores.

4. Although we believe we have sufficient temperature data concerning the thermal capacity of Lake Michigan, monitor-

ing programs are desirable to determine local effects. We support the continuation and, where necessary, expansion of such programs and the development of more accurate methods of prediction. In this regard, we, together with a number of other electric generating utilities on Lake Michigan, have funded monitoring and research programs, among which is the $185,000 University of Michigan program covering the study of the radiological inventory and capacity of Lake Michigan.

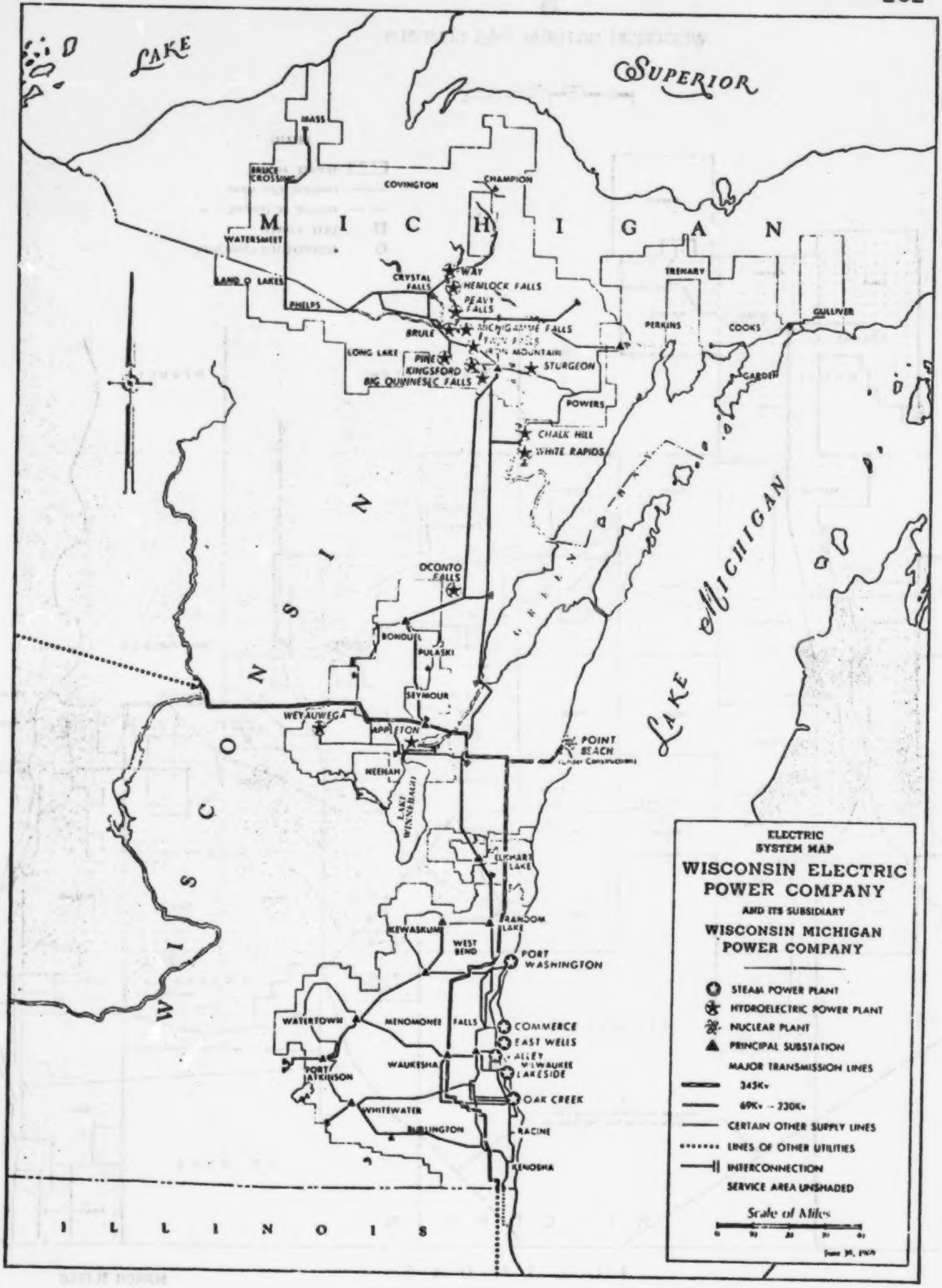
5. In some particular cases, industrial facilities, like power plants, on the shores of bodies of water, have beneficial aspects which should be considered in regard to oxygenation of water where substantial organic loads increase oxygen demands within the hypolimnion. The use of this colder water (hypolimnion) for cooling purposes and its return to the surface layers of the lake aid in the needed water oxygenation by exposing naturally colder waters depleted of oxygen to the atmosphere, wind and wave actions. If the circulation of cooling water is large enough, or the temperature sufficiently high, ice formation in winter can be reduced and the ice barrier between atmosphere and water eliminated, thereby increasing oxygenation capability.

6. The Conference among its previous recommendations suggested the creation of a special committee on nuclear discharges and thermal pollution of power plants and reactors. Insofar as thermal effects are concerned, we fail to note the

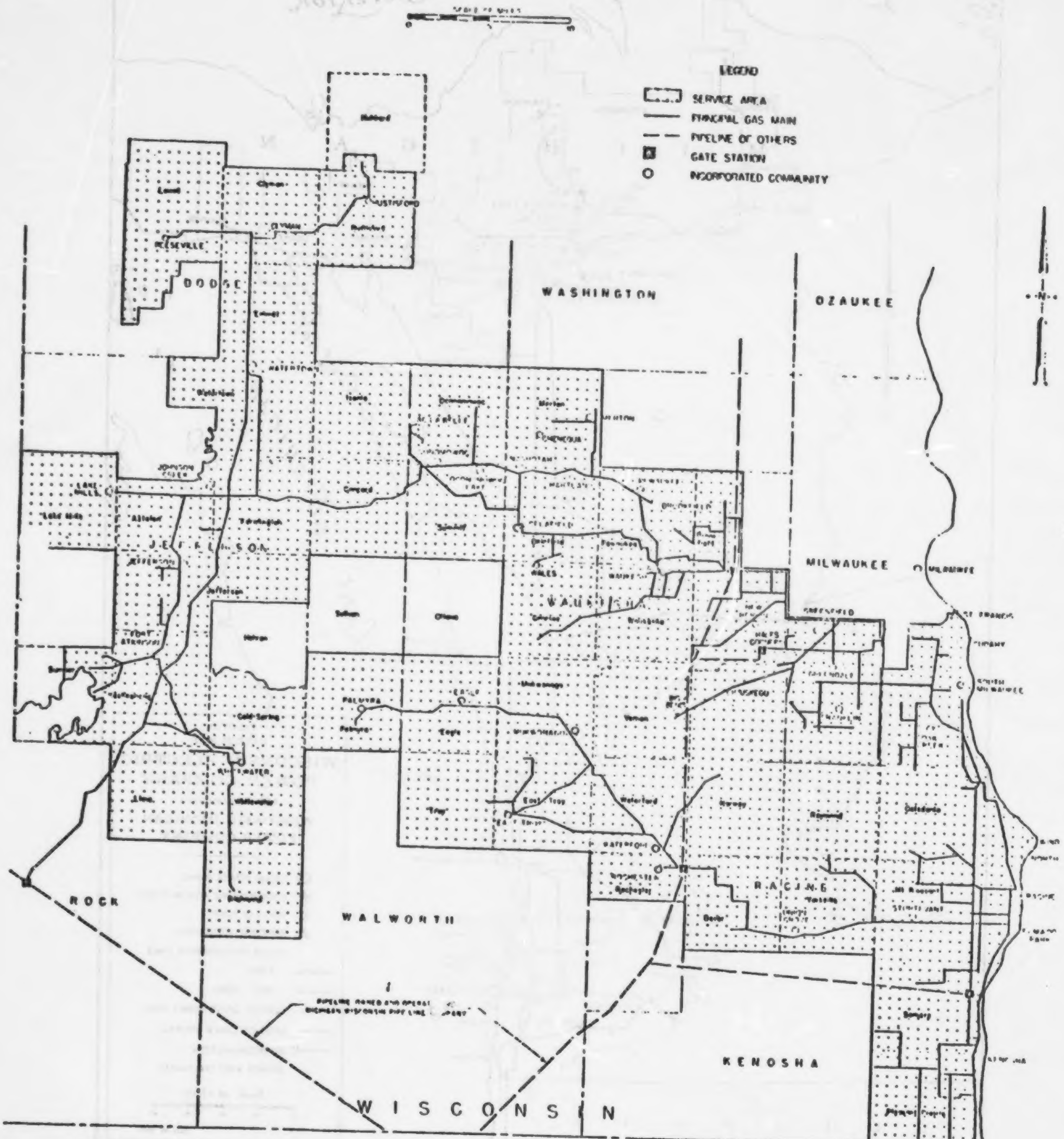
difference between thermal discharges from a nuclear power plant or from any other source. In regard to nuclear discharges, we believe it is necessary. once again, to call attention to the fact that the Atomic Energy Commission has set extremely low and rigid limits on radioactive releases and all nuclear power plants are subject to regulations in their design, construction and operation by this Commission. It has been well demonstrated that normal nuclear power plant releases are substantially below the safety limits established by the Atomic Energy Commission. The disposal of solid radioactive substances is regulated by the State of Wisconsin under the Radiation Protection Code of the Wisconsin Administrative Code.

Plans and operations for nuclear, as well as fossil fuel, power plants are subject to regulation by a number of state agencies, including in Wisconsin the Public Service Commission and the Department of Natural Resources. We believe that the committee proposed by the Conference would essentially duplicate the efforts of these other regulatory agencies with resultant delays in the construction of necessary facilities without any proportionate benefit.

One more observation: the electric utility industry has located energy conversion devices in large central power stations to take advantage of the economies of scale. These concentrations of generating facilities with their attendant large use of fuel and cooling water have resulted in substantial benefits to the public, but have also focused immediate attention to their singular nature. Nonetheless, the application of electricity to do man's work continues on the whole to be more effective in the intelligent utilization of natural resources, including protection of the environment, than any available alternative.


LAKE SUPERIOR
MICHIGAN
WISCONSIN
ILLINOIS
LAKE MICHIGAN
GREEN BAY
MASS
BRUCE CROSSING
COVINGTON
CHAMPION
WATERSMEET
LAND O LAKES
PHELPS
CRYSTAL FALLS
WAY
HEMLOCK FALLS
PEAVY FALLS
BRULE
MICHIGAMME FALLS
TWIN FALLS
IRON MOUNTAIN
LONG LAKE
PINE
KINGSFORD
BIG QUINNESEC FALLS
STURGEON
TRENARY
PERKINS
COOKS
GULLIVER
GARDEN
POWERS
CHALK HILL
WHITE RAPIDS
OCONTO FALLS
BONDUEL
PULASKI
SEYMOUR
WEYAUWEGA
APPLETON
NEENAH
LAKE WINNEBAGO
POINT BEACH (Under Construction)
ELKHART LAKE
RANDOM LAKE
KEWASKUM
WEST BEND
PORT WASHINGTON
WATERTOWN
MENOMONEE FALLS
COMMERCE
EAST WELLS
VALLEY
MILWAUKEE
LAKESIDE
WAUKESHA
FORT ATKINSON
OAK CREEK
WHITEWATER
BURLINGTON
RACINE
KENOSHA
ELECTRIC SYSTEM MAP
WISCONSIN ELECTRIC POWER COMPANY
AND ITS SUBSIDIARY
WISCONSIN MICHIGAN POWER COMPANY
STEAM POWER PLANT
HYDROELECTRIC POWER PLANT
NUCLEAR PLANT
PRINCIPAL SUBSTATION
MAJOR TRANSMISSION LINES
345Kv
69Kv – 230Kv
CERTAIN OTHER SUPPLY LINES
LINES OF OTHER UTILITIES
INTERCONNECTION
SERVICE AREA UNSHADED
Scale of Miles
0
10
20
30
40
June 30, 1969

SYSTEM MAP OF WISCONSIN NATURAL GAS COMPANY


LEGEND
SERVICE AREA
PRINCIPAL GAS MAIN
PIPELINE OF OTHERS
GATE STATION
INCORPORATED COMMUNITY
N
DODGE
REESEVILLE
WASHINGTON
OZAUKEE
JEFFERSON
LAKE MILLS
WATERTOWN
WAUKESHA
MILWAUKEE
ST. FRANCIS
CUDAHY
SOUTH MILWAUKEE
PALMYRA
EAGLE
WHITEWATER
WATERFORD
ROCHESTER
RACINE
ROCK
WALWORTH
PIPELINE OWNED AND OPERATED BY MICHIGAN WISCONSIN PIPE LINE COMPANY
KENOSHA
WISCONSIN
ILLINOIS

MARCH 31, 1960

MR. LEHNER: Thank you.

MR. STEIN: Thank you.

Are there any comments or questions?

As I understand it, you say that the AEC is doing this job and a committee isn't necessary?

MR. LEHNER: I would suspect that is the stand of the vice president of Wisconsin Electric Power Company, yes.

MR. STEIN: You know, we tried that in Minnesota and the State wasn't too happy with that. I wonder what happened?

MR. LEHNER: Well, it is my understanding that it is still in litigation.

MR. STEIN: That is right. That is right. As a matter of fact, today we are in litigation in the District Court in Miami, Florida, against Florida Power and Light when we tried it. So I don't know, it may be to the advantage of the industry and us if we get together with this committee. Where we have got two wonderful cases of litigation, I don't believe that is the way to handle the issue.

MR. LEHNER: Well, I am sure you can bank on our cooperation.

MR. STEIN: I think what the conferees were trying to do was to try to hold a hand out to the industry to see if we can handle these cases without going into litigation, both with the State and the Federal Government. The difficulty is if the industry says it isn't necessary and a duplication,and we find that the record shows that,we wind up in court. Maybe we should--I don't know, why don't we think about whether you would rather deal with the committee or the way to handle this is to go to court.

MR. LENHER: I would think we would like to deal with one body. Duplication implies somewhat uselessness, I would say.

MR. STEIN: I think this is our system of government. You may be satisfied with one agency of government, but just look what we have up here--we have four States and the Federal Government represented; we deal with our sister agency; you saw, the Corps of Engineers; I think the AEC is here. This is a fact of life in the country when you are dealing with water in which all these people are interested.

I say this advisedly because I think this is a serious problem. Maybe the conferees are wrong on this, but unless we recognize and then approach this with the idea that we are going to get together at the initial stages and try to have a committee work this out, the indication to me is that we wind up in court. If you are going to say that we shouldn't have this committee working on this, then, as I see it, the alternative is one where we will be sitting in court as they are in Minnesota and Florida. Maybe that is what we are going to do? But the device we are trying to use here is to try to set up some kind of dialogue between the State authorities, Federal authorities and the industry so we can avoid this.

I hope your industry will meet us halfway, because if I weren't up here now, maybe the other assignment would have been more attractive considering the weather. I would have been down in Miami on that case. This is an issue that we are going to face increasingly. I hope you won't reject the approach of these conferees and let this get out of hand.

MR. LEHNER: No, I don't think we mean that.

I think we mean to question it somewhat, and I certainly want to go on record as saying we will meet anybody more than halfway. We certainly, in our dealings with the Atomic Energy Commission, have learned the facts of life on that score. I think it is a matter of the multiplicity of approaches that confuses us somewhat.

MR. STEIN: I don't think it is a multiplicity. Let me get specific.

I would like to ask this of Mr. Klassen.

Mr. Klassen, do you recall what your mixing zone is in Illinois for heat? Mr. Klassen, is he here?

MR. LELAND: He had to step out.

MR. STEIN: Oh, he had to step out.

I don't know whether Mr. Leland knows. To my recollection this is 200 feet or 600 feet?

MR. LELAND: Six hundred.

MR. STEIN: Six hundred feet. You are proposing, as I recall, you said 3,500 feet.

MR. LEHNER: That isn't necessarily a mixing zone. That is where you could possibly detect the top molecule of warmer water. The mixing zone I think is a rather nebulous definition or concept.

MR. STEIN: Then a little later you talked about--in other words, you are not talking about 3,500 feet mixing zone? Maybe I misunderstood you. That is interesting.

MR. LEHNER: No, I said, "We anticipate that the maximum distance that any temperature increase could be detected is in the order of 3,500 to 5,000 feet."

The basis, I think, for that statement is the infrared photographs and surveys we have had made of our existing powerplants.

MR. STEIN: Well, that philosophy seems to me suspiciously close to the philosophy of the "assimilative capacity of the streams" that they used to talk about before we got all these polluted streams around the country.

This gets me. And you talk 5 degrees above the water temperature when at least our National Advisory Committee, as far as I understood, recommended 3 degrees for lake temperature. Now, again, when this is well known and put out and we have disparities such as this, the more I hear this and see this, the more I think the committee might be a good idea if you people would sit down and talk to them; because these are precisely the kinds of differences which when they are not talked out lead to these court cases.

MR. LEHNER: I don't think there has been any absence of dialogue, frankly.

MR. STEIN: No. Well, it is a question of meaningful dialogue. I guess if you really want to do this, in some cases diatribe is dialogue, but I don't know that that satisfies anything.

Sir, I submit to you that really, if I listened to your statement correctly, there are pretty significant differences, not in the policy or in the procedure but in the substance of what you are saying--what perhaps they are doing in Illinois, and what the national committee has recommended. I would suggest if we are talking in terms of powerplants, and I mean heat from all sources, not just powerplants--and I agree with you on that, that I don't care where the heat comes from it has to be controlled--but if we are talking about heat going into Lake Michigan, I think in view of what I hear our technical people saying and your people saying, that the sooner we begin talking and try to narrow that gap the better we are all going to be.

MR. LEHNER: I can't disagree there.

MR. STEIN: All right.

Any other comment or question?

If not, thank you very much, sir.

Mr. Frangos.

MR. FRANGOS: Are there any other groups from Wisconsin that wish to make a presentation that haven't contacted me?

That concludes our presentation, Mr. Chairman.

MR. STEIN: We will recess until 9:30 tomorrow morning when we will hear from Illinois, Indiana, and then have a discussion among the conferees.

MR. PURDY: Are you going to leave me out?

MR. STEIN: No. I am sorry, late but not forgotten. We will also hear from Michigan.

(Whereupon, at 4:35 o'clock, an adjournment was taken until 9:30 o'clock, Wednesday, April 1, 1970.)

- - -

MORNING SESSION

Wednesday, April 1, 1970

(9:30 o'clock)

MR. STEIN: Let's reconvene.

I believe Mr. Frangos of Wisconsin has one more statement. Is that correct?

MR. FRANGOS: That is correct, Mr. Chairman.

Before getting into that, I would like to introduce to the panel and public and for the record Mr. Donald J. Mackie, who is the Assistant Secretary of the Department of Natural Resources. He will serve as a conferee today.

You will recall that yesterday Governor Knowles suggested that perhaps the conferees would be interested in seeing some of the activities here in Wisconsin as they relate to the several problems of agricultural pollution. We have with us today Professor Marvin Beatty, who is an Extension Specialist with the Soils Department with the University of Wisconsin at Madison, and he would like to make a presentation, which I think at least is a hopeful indication that one sector of our polluters is awakening to the fact that there is a problem and I think we are going to be seeing some things happening in the near future in this area.

So I would like to introduce Professor Beatty. He does have a slide presentation.

MARVIN T. BEATTY, PROFESSOR
SOIL SCIENCE DEPARTMENT
UNIVERSITY OF WISCONSIN
MADISON, WISCONSIN

PROFESSOR BEATTY: Mr. Chairman, ladies and gentlemen.

I am happy to be here this morning for a brief presentation on one aspect of concern with our animal waste and byproduct management problems in Wisconsin. I understand that yesterday some aspects of this program and problems were already discussed and my presentation this morning is an outgrowth and adaptation of a presentation which was prepared by two of my colleagues and myself for a conference on farm animal waste and byproduct management which was held at the University of Wisconsin last November.

As a part of that conference we attempted to indicate what might be critical situations in animal waste and byproduct management from an environmental point of view. Now, in this area of concern there are several factors which prompt increased interest in the effects of animal wastes and byproducts.

First, of course, is the general increase in concern about what is happening to our environment.

Second is the increased number of nonfarm residences in rural areas. This is often, but not always, the result of urban sprawl.

Third there is the increased size of commercial farming operations, which means more concentrations of animals.

Fourth there is the decrease in relative cost of commercial fertilizers, which in turn diminishes the value of animal manures as a fertilizer material.

The kinds of situations in which problems may develop with animal wastes and byproduct depend on the interaction of several factors and it is these factors that I want to talk about this morning and illustrate with some slides. These factors include the kinds and amounts of animal wastes themselves, the sources, where they are located, how large they are, how concentrated they are, the proximity to people, the physical environment.

Most of my slides are going to deal with this point. This includes such things as the characteristics of the bedrock, the landscape, the hydrologic system and the soil, and finally the uses and demands on our land and water resources.

One of the main points that I would like to make this morning is that these factors which I have just enumerated are extremely variable from place to place; that, therefore, there is no one easy answer to the problems which exist or which may develop. Along with the idea that problems and critical situations are diverse, I feel that solutions must be of several kinds and must likely include State, local and Federal action, which, of course, is one of the reasons you folks are here today.

A key part of the action is analysis of the problem or critical situations where problems may develop. To illustrate these I would like to use some slides, and I must apologize for the fact that all of these come from Wisconsin. I will have to ask you to imagine how these may fit if you are representing one of the neighboring States, but let me assure you that the things which I am pointing out here are equally applicable in principle and in some cases in fact to your States as well.

Turning to the slides, let us just point out that Wisconsin animal population as of January 1 this year included about 4 million cattle and calves, 1.6 million hogs, 7 million chickens and turkeys, and that 3 million of the 4 million cattle were dairy animals. This is somewhat different than the situation in some of the neighboring States, for instance Illinois.

One of the points that we would like to make an analysis of these problems is to find out the distribution of the animals. In Wisconsin the distribution is not uniform by any means, as this slide illustrates here. The dense distribution is in the southern part of the State. Colors on this slide shown in red and pink indicate the highest densities, green is intermediate, blue is quite low, and the yellow areas in the north indicate very low density of total animals, total cattle and calves on a county basis.

M. T. Beatty

Most of the animals in Wisconsin, as I had mentioned, consist of dairy cows. The distribution of these dairy animals within the State is shown on this slide. Again the red colors indicate the highest densities, then green, blue, yellow. This indicates that in the Lake Michigan Basin, which is of concern to you folks, we have some of the highest densities of dairy cattle and calves in Wisconsin.

If we look at that another way, the distribution on a dock count basis, prepared by the Wisconsin State Department of Agriculture, looks something like this. We have strong distribution along the east side of the State, also in the northwest, and in the southwest, with blanks essentially in the center and in the far north.

Wisconsin hog population, as one might expect since we are on the edge of the corn belt, is strongly concentrated in the southern tiers of counties and does not extend over a very large geographic area of the State.

The point of these slides is simply to illustrate that analysis of the distribution of animals is one key point in attacking these kinds of problems. An analysis of this kind which we made on a State basis could be done regionally, could be done on a watershed basis and could be done on a county basis. In other words, it is amenable to several levels of utilization.

The poultry industry in Wisconsin is characterized in general terms by large numbers of turkeys and large commercial operations and those are shown on the upper numbers within any given county. These are largely in northwestern Wisconsin where we have very substantial numbers in certain areas. The egg operations, commercial egg-producing operations, are principally in southeastern Wisconsin, in large numbers being concentrated in Jefferson and Waukesha Counties. We have two areas of more specialized poultry operations, a broiler industry over in the western side of the State with substantial numbers of birds and a large duck operation in Racine County.

In addition to considering animals, the distribution of people is extremely important, because many of our problems are arising because of negative interactions between people and animals. This slide became even more out of date today, I guess this is the day we turn in our census figures, but it shows the distribution of Wisconsin people in 1960. Some of the trends that are shown here will become even more pronounced in 1970 as our cities decentralize, and so on, and the kinds of interactions that we have are going to be extremely important. If we compare the distribution of livestock and the distribution of people on a Statewide basis it is easy to see that there are broad areas of eastern Wisconsin, precisely the areas you are concerned with in part today, where both people and animals are concentrated. The significance of this again is readily transferable to regional, county or local situations.

The critical situations with animal wastes and byproducts which may develop are not dependent only on the distribution of livestock and people. There are several physical factors which play extremely important roles. One of these is the geologic materials which physically underlie any given State. These materials can have significance Statewide or regionwide or within a county or smaller areas. It can be seen from this map, which is illustrative of Wisconsin, that bedrock is distinctly different between regions. The differences are reflected in land forms from rolling bluffs such as these along the Mississippi River of the west, which we can show in cross section something like this, with steep slopes, integrated drainage systems and a well-developed, mature landscape. In contrast we have differences such as this one shown by diagram schematically, one of our graciated areas, very short irregular slopes, many areas of undrained depressions, a poorly-integrated drainage system, and some of your problems with animal waste movement to surface waters are going to be quite different in this situation than they would in the former.

Soils have a very important role here. This slide is diagramatic of what can be done by way of analysis. Soil maps can be made at many levels of generalization. This one shows some of the major properties of broad groups of soils in the State. It has an interesting tie back to the animal distribution, which is probably less apparent on the geologic map. The areas shown in red around Green Bay and Lake Winnebago, the Lake Michigan shoreline, are also one of the areas of concentration of dairy animals. So the soils have an influence on the farming in the broad long-term sense. They also have an influence on how animal wastes may be managed within any short-term situation.

In addition to bedrock and soils, the hydrologic situation must be given consideration. This slide shows the variation of annual precipitation across the State. It varies about 10 inches. It is influenced, of course, by soils, climate, and it contributes, in the pattern by which the precipitation falls, whether it is rain or snow, whether it leaves slowly or rapidly, to some of the kinds of problems which may be developed and it may influence some of the solutions to animal waste management problems.

Lakes play an important part in the hydrologic system of large areas of Wisconsin and some of the neighboring States as well. The numbers of named lakes vary from none in some counties of southwestern Wisconsin to a high of 548 in Vilas County or northeastern Wisconsin, and because of the value of these as a recreational resource and their esthetic value as well, because of the influence that they may have in the hydrologic system, they must come into any kind of analysis of the animal waste management possibilities or problems in a given area.

Putting some of these figures together, it can be seen from this slide that from 6 to 20 inches of water ultimately appears as runoff in Wisconsin. The amount is greatest in the north, gradually decreases to the south, and this variation significantly influences our pollution problems.

We can summarize this somewhat further by means of a very general map of hydrologic provinces showing such differences across Wisconsin as those which can be characterized principally as a bedrock province, others glacial drift provinces, outwash and other provinces which I won't stop to mention here.

As we move from analysis of the earth resource problems, we must not fail to realize that as we think of some fairly simple critical situations that these are really very complex. For example, this nitrogen cycle with its many interrelationships, where we show animal manure entering at one point, going through a series of transformations and participating in a number of very complex and interrelated reactions, we must realize that this is the kind of situation with which we are dealing and that simply making a change at one point on this cycle may or may not have an immediate effect, may not have any effect at all if some other part of the system is contributing to the problem and is not adequately treated at the same time.

Having emphasized that this is a critical situation or a complex situation, let us turn and look at six or seven simple situations that we see in Wisconsin where animal wastes and their management are creating and probably will create more critical problems.

One is where large concentrations of animals and people are in close promixity. And we view some cartoon-type slides to illustrate these. As people move out and as animal wastes become more concentrated in larger farm operations, we find more and more of the situation typified by this cartoon here, odor problems, noise, dust, and these are some of the most difficult problems with which to contend. As we see more and more of this from our airplanes, we are going to see more and more of the kind of feelings expressed in that previous slide.

Another of our critical situations is that which develops when we have high livestock densities. When we have these, we are going to have more animal wastes, more possibilities for pollution and the need for more sophisticated types of treatment and management processes.

This slide is a little bit dark, may be hard to see. It simply typifies one of our major dairy operations with a large number of animals clustered on the slope near a stream which is just above a lake, and perhaps we could typify the situation, a third critical situation,a little better this way. We have large areas of Wisconsin with watersheds which include both streams and lakes, very productive soils, large animal operations, when you think of them county or regionwide with our productive dairy systems of farming, and when we have this, we have a rich system of farming, we have rich water, we have all of the possibilities for eutrophication.

We might mention that this kind of situation is most apt to occur or is occurring in the glaciated parts of eastern Wisconsin, which is again part of the area with which you folks are concerned. This aerial shot of one of our major lakes with the farmland around it illustrates the kind of area where we may expect this kind of problem to develop.

Another problem which needs to be analyzed, treated, and I think we mentioned yesterday some treatment measures have been initiated, deals with the animals yarded along flood plains or stream channels in many of our Wisconsin areas. Many of Wisconsin farmsteads and other areas as well were originally established near a stream. Barnyards often join or cross the stream. A dairy herd that may have had 20 cows in it a few years ago may now have 50, 100 or more, and as more animals are kept on one farm and as they are kept confined year-round, the pollution potential increases. The manure washed from these barnyards may consume valuable oxygen in the stream and if critical levels are not maintained aquatic life suffers and so does the appearance of the stream.

This situation can occur in many parts of the State. Western Wisconsin appears to be particularly vulnerable because of its long narrow valleys and the tendency to locate farmsteads in these valleys adjacent to the stream.

One of the possibilities for State or regional or local action in this regard that I have mentioned to a number of audiences is simply inventory, the number of farmsteads in which this situation occurs where the animals are right in or the barnyard adjoins the stream channel, the floodway or the flood plain.

Wisconsin has large areas of limestone. If we had paused with the geology map awhile ago this could have been pointed out. But areas of shallow soils over these limestones, soils like this, are extensive in some areas. Door County, in your area of concern, would be a particularly good example. Detailed soil studies are needed in these kinds of situations before waste disposal facilities are installed, particularly underground. There is some concern with putting in manure holding tanks so that the manure might not be spread in the winter. This could be a very desirable thing in some areas. Putting it over a soil like this could be extremely undesirable if one of these would ever spring a leak. This kind of limestone immediately below the soil can transmit untreated or polluted liquids very rapidly to wells or possibly to surface waters. So where we have shallow soils of this kind, we are very concerned about what kind of wastes might be put in or on the soil.

Likewise, sandy soils, which are extensive in central Wisconsin and which I know occur in the neighboring States of Illinois, Indiana, and Michigan, can cause critical situations to develop since much of the precipitation which falls on soils like these infiltrates. We have noted the buildup of nitrates under barnyard drainage areas at one of our experimental farms at Hancock and this illustrates at least that there is a potential hazard. One redeeming feature of these soils, however, is that they are highly permeable and dilution may take place more rapidly here than in other areas where we have less permeable soils.

One of the areas in one of the more important critical situations of the seven that I wish to mention which occurs in Wisconsin develops when manure is spread on sloping land in the winter. The research results are extremely limited as yet, but reported losses under some circumstances can be great. It is easiest to understand the significance of the numbers shown on this slide, which is a compilation of data from a couple of sources, two years research results in Wisconsin, one year of research results from about thirty years ago conducted in Vermont, and I think if we can zoom that lens down just a little bit we can get a little more data there on the bottom. Thank you.

These data indicate the extreme variability of losses in terms of pounds of nitrogen and pounds of phosphorus from the runoff when manure was spread in Wisconsin at the rate of 15 tons per acre on an 11 percent slope in the winter, and in this particular situation in 1967 3/4 of an inch of rain occurred the next day. This is a very uncommon combination of circumstances, but nevertheless the fact that it occurred indicates that a hazard does exist.

The next year when the same practices were carried out there was no measurable loss of nitrogen or phosphorus in the runoff. We are going to need more research to give probabilities of various losses occurring, but the magnitude of losses which occurred in 1967 and also the magnitude of losses which occurred from the results reported from Vermont, the bottom set of data, indicate that we have a potential here for some serious movement of nitrogen and phosphorus to surface waters, and in situations where we have watersheds with large numbers of lakes this could cause a serious problem. This prompts some of the concern, which I am sure you have noted, about alternative ways of storing, handling and distributing manure not in the winter but the following spring.

These are seven critical situations which we can identify for Wisconsin which I suspect occur in other States, and we would like to call your attention to the fact that these need to be considered by people planning treatment or management measures. In the presentation last fall we asked the participants, who numbered about 200, some of these questions:

Where in your area of work does there exist the potential for significant negative interaction between animal wastes and people?

What are the water quality standards in your area?

Do the current animal waste handling practices adversely affect streams by pollution or lakes by nutrient enrichment?

Are the wells in your area being checked for quality?

May we have the lights, please, while I summarize.

These examples, I think, illustrate some of the points that we must consider as we plan remedial and treatment measures in the future, and solution or prevention of these problems, to me at least, must include several activities. To me these include:

Analysis and research of rural ecosystems, which include consideration of the factors which I have illustrated here with the slides.

Second, developing and testing of additional management systems for handling animal wastes and byproducts. Research is under way. I feel that more is definitely needed.

Third, we must give integrated consideration to the ecological, esthetic, economic and technological factors involved so as to develop sound and coordinated plans and action programs.

I feel that if these things are done, local people, as I have talked with them, are concerned, they are willing to cooperate and participate in these kinds of programs. During the time that elapsed from the conference we held last fall until now we have talked about this to a variety of people in rural areas and invariably we have had a very favorable response when these kinds of problems and concerns are brought before them. They are not negative in the sense of saying, "Well, we are not doing anything wrong, we don't want to change." They are concerned. They would like to know what they can do to change the practices that might be causing problems. They would like definite integrated answers and they would like to know that others who might be participating in the pollution of surface or ground waters are likewise being asked to make suitable changes.

With this background of concern and thought among rural people, farmers, farm leaders and others, I think that the possibilities for making constructive changes and having them accepted by local people are excellent.

I would like to thank you folks very much for the opportunity this morning to present this somewhat ecological and natural resource oriented presentation of the kinds of considerations that I feel are needed and I hope that as we proceed in this concern for improving the quality of our waters we may take these into account and at another time perhaps we can talk about solutions and not entirely the kinds of considerations that must be given in attacking the problem.

Thank you very much.

MR. STEIN: Thank you very much, Professor.

Does Wisconsin have anything further?

MR. FRANGOS: That concludes our presentation.

I would like to express my thanks to Professor Beatty for coming on such short notice. Again I repeat that I think this is an encouraging sign that there is an awareness in other areas in terms of pollution problems, and if we are really going to make progress we are going to have to examine very closely and move into these areas away from the traditional point source type of solutions that we have been concerned with for quite a while.

That concludes our presentation.

MR. STEIN: Thank you very much, Mr. Frangos.

We will now call on Illinois. Mr. Klassen.

CLARENCE W. KLASSEN, TECHNICAL SECRETARY
ILLINOIS SANITARY WATER BOARD
SPRINGFIELD, ILLINOIS

MR. KLASSEN: Mr. Chairman, conferees and ladies and gentlemen.

As the Governor indicated yesterday, as conferee for Illinois I will present the details of the Illinois presentation.

The Summary of Conference, First Session, issued subsequent to several meetings held by the conferees during January to March 1968 presented 26 recommendations. The following actions have been taken and are being taken by Illinois with respect to these recommendations:

1. Provide municipal waste treatment to comply with approved water quality standards and to provide 80 percent reduction in total phosphorus, all by 1972.

All municipal sewage treatment plant effluents discharged to Lake Michigan in Illinois are within the North Shore Sanitary District, which extends from the

Illinois-Wisconsin line south to Cook County. All municipalities in Cook County adjacent to Lake Michigan are served by the Metropolitan Sanitary District of Greater Chicago sewage treatment facilities which discharge to the Illinois River watershed.

The North Shore Sanitary District program to remove all effluent discharges from Lake Michigan, as reported during the last session of this conference, is now under construction. A project originally estimated to cost $60 million--I just want to add here it has been estimated that there will be several more million dollars needed--provides for complete diversion of all wastes to the Mississippi River watershed by way of the Illinois River. The first phase, for which the North Shore Sanitary District secured voter approval for a general obligation bond issue of $35 million, and that has been accomplished since our last conference, will provide for the diversion of the Lake Bluff, Lake Forest, Highland Park--(Ravine Drive, Park Avenue and Cary Avenue)primary plant effluents from Lake Michigan to the Clavey Road sewage treatment plant which discharges to the Skokie River, which flows south into the Illinois River. The first phase provides for a diversion of the North Chicago Sewage Treatment Works effluent to a proposed sewage treatment plant at Gurnee, and for expansion and improvement of the Waukegan Sewage Treatment Works, including phosphate reduction, all by 1972. The Waukegan sewage treatment plant will continue to discharge to the lake unless and until the district can fund the entire estimated $60 million project.

The District's application for a Federal grant for sewage treatment works has been certified to the Federal Water Pollution Control Administration during 1970, that is in the last month, for a grant of $10,628,000. That will be added to the $35 million that the voters have approved.

I might say that probably in another couple of hours the Governor will present to our Legislature this morning the proposal that he mentioned yesterday for State financial aid to municipalities in Illinois.

The District's original plans called for all improvements in the $35 million project to be under construction in 1970 and completed by 1972. I might say that several of these phases have already been completed. Unexpected problems in securing zoning approvals and easements have resulted in revision of scheduled completion dates, with anticipated delays of as much as one year. This does not mean that the delays will be beyond 1972, however.

Attached and a part of this presentation is a detailed status report prepared by the North Shore Sanitary District dated March 16, 1970. The presentation will include in the record, and I won't go into all the details, seven permits that the Sanitary Water Board in Illinois has already issued to the District. As an example, a permit for the Lake Forest 24-inch sewer and force main issued April 18, 1969. That project has been completed.

And there are listed here in detail the six other permits that the Sanitary Water Board has issued.

Appended to the report, as indicated, is a very detailed review and status of this particular project, including a cause of delay of several of the phases that would have been under construction. It is rather interesting, as you will note in here, the delays for the most part were initiated by people within the District, some that did not want a certain new plant located at a location, the zoning problem that they have had with the county officials, particularly the Clavey Road plant, which is a key to the whole program. A group of citizens near the Clavey Road plant object to its expansion, and it is a matter of public record that--and I am paraphrasing their statement, it was put in a little choicer words--they couldn't care less whether the wastes were taken out of Lake Michigan or not, just so that it wouldn't involve expansion of the sewage treatment plant in their community.

However, this has been worked out and on April 13th this case is coming to trial and we are prepared to testify that the District is going agree to make certain changes in the design which will involve, for example, covering of primary tanks and such things in order to get around this objection.

It was rather interesting. It is not a part of this, but the young lady that testified yesterday asking the conferees to speed up these processes and at the same time wondering whether we could get more action by taking some of these things to court, they don't exactly jibe, in my opinion. It has been our experience in Illinois that the courts should be an absolutely last resort; because we know, through our legal processes, if you once get into court or take someone into court that then there can be legal delays involved which would not be included in the project if the administrative agency, frankly, kept control and kept the pressures on the polluter, such as receiving extensions of sewer systems and what-not.

In this report it gives in detail the status which pretty much confirms the testimony by the Army and the Navy on the Great Lakes Naval Training station and Fort Sheridan. These negotiations are under way. It is not just a matter of talk. They are down to the point of actually agreeing on the rate schedule and we don't actually anticipate any hangup there.

Appended to this is a project schedule chart, which you are all familiar with, which shows every one of the projects, the date when plans are to be and have been prepared, construction start and completion. You will note the last date for scheduled completion of the project is in August of 1972. We felt that this should be included because this can serve as a means of future conferences, sessions of this conference, to chart the progress of this most important project so far as Illinois is concerned and our part in cleaning up Lake Michigan.

2. Industries are to provide adequate treatment prior to discharge to the lake by 1972.

Domestic wastes from all industries in the North Chicago-Waukegan area are tributary to the North Shore Sanitary District sewage treatment plants.

All industries located in the North Chicago-Waukegan industrial area discharge process wastes to sewers which are tributary to the North Chicago or Waukegan treatment works operated by the North Shore Sanitary District, except as listed below.

The following is a summary of the activities and the status of these industries and the quantity and strength of their waste discharges:

Abbott Laboratories. Manufactures antibiotics, chemical drugs and pharmaceuticals, resulting in an extremely complex waste treatment problem. The industrial treatment works processes an average daily flow of 658,000 gallons during February of 1970, achieving an 88 percent reduction in BOD and a 90 percent removal of suspended solids.

The effluent from the industrial waste treatment plant is combined with other process wastes from the Abbott complex. The combined effluent is monitored for compliance with the Sanitary Water Board criteria. Combined flows average 12.2 MGD. The BOD of the combined flow averages 57 parts per million (sic) for February while the suspended solids averaged 100 milligrams per liter.

Sanitary Water Board guidelines relating to discharge to Lake Michigan, included in SWB-7, that have been approved by the Department of Interior: BOD reduction at least 85 percent in the treatment plant, and final effluent not to exceed 40 milligrams per liter and 45 milligrams per liter BOD and suspended solids, respectively.

I want to mention at this point that the effluent criteria that we refer to are actually guidelines, and as we know, the water quality standards pertain to the ambient quality in the lake and not to any particular effluent criteria.

Inasmuch as the question of "effluent dilution" has been associated with this industry by an Assistant

Secretary of the Department of the Interior, a brief discussion on this point is deemed advisable.

Technical Release 20-22 of the Illinois Sanitary Water Board permits spent industrial cooling water to be mixed with effluent from an industrial secondary type treatment plant having at least 80 percent BOD removal to produce a combined effluent BOD concentration of 40 parts per million or below. This is often referred to as "dilution." The word dilution carries with it the connotation that such an industrial firm could be mixing lake water with its effluent for the sole purpose of making its performance look better than it actually is. This would be inconsistent with the Illinois Sanitary Water Board standards, and Abbott does not engage in this practice.

At this plant there are three types of waste streams: the sanitary wastes, and these are handled by the North Shore Sanitary District; process wastes, which require secondary treatment; spent raw water stream, which consists mainly of cooling water, including rain water since it is collected and transported in the plant through storm sewer systems.

A plant may choose to combine both of the latter waste streams into one relatively dilute waste stream, which can then be sent through a secondary treatment plant, or as an alternate to keep these two streams separated until after the process waste stream has undergone secondary treatment. These two streams can then be combined prior to the final discharge to the lake.

The quality of the final effluent would essentially be the same in both cases and if anything the absolute degree of BOD removal would be greater in the secondary alternate, since the efficiency of the treatment plant is likely to be higher when handling a smaller volume of concentrated wastes.

The operation of this plant was designed to maximize efficiency by diverting around the secondary treatment plant those waters which do not require sophisticated treatment. It is this practice which some have misleadingly called "dilution." The Sanitary Water Board criteria and the technical bulletins contemplated that the stated standards shall be met by measuring the total effluent from the plant and not each individual waste stream, regardless of what location it might be coming from within the plant.

This point is raised at this conference with the idea that if these procedures now followed in Illinois are to be modified that such modification should be applicable to all industrial discharges in the Lake Michigan Basin.

An industrial waste treatment works improvement program was completed during April 1969. After a shakedown period, it was found that the final effluent generally complied with the BOD limits; however, solids carryover resulted in suspended solids concentrations above the prescribed limits. Abbott plans to start construction, they authorized this money, of a $2.5 million improvement in the immediate future to attain the consistent, efficient and reliable performance of the treatment facilities needed to comply with the Sanitary Water Board effluent quality limits. Completion of these improvements is scheduled for December 1970. This program is described in the March 12, 1970, report by the industry and is made part of this presentation.

I will refer to this. You will find appended to this a very detailed report with dates when these various phases will be completed, the first schedule to be completed in August.

However, Abbott is negotiating with the North Shore Sanitary District for diversion of their final effluent from Lake Michigan to the District's facilities which will discharge to the Illinois River watershed. In other words, it will become part of the whole program to remove all of the wastes from Lake Michigan.

U. S. Steel-Waukegan Works. Produces carbon and stainless steel springs, coated wire and wire for manufacturers.

This plant utilizes approximately 3.5 million gallons per day of lake water which is returned through five outfall sewers. The wastes of this plant are generally in compliance with Sanitary Water Board guidelines for iron and pH, with occasionally samples exceeding the guidelines. U. S. Steel presently hauls 30,000 gallons per day of their waste acid to their Gary, Indiana, plant for disposal in deep well injection. A new stationary rinse operation, recently completed, should materially further reduce iron discharge.

Continuous pH monitoring is to be installed at the four outlets. A comprehensive engineering study for refinements necessary to insure continuous compliance with Sanitary Water Board guidelines is under way and will be completed by December 1970. The reduction from 1962 to date in pollutional discharges is shown in the following comparison.

We have here, then, the total flow. For February 1962 it was 5.8 million gallons. This has been reduced last January to 2.8 million.

Total solids in 1962 per day was 35,000 pounds. This has been reduced to 9,000.

Suspended solids in February 1962, 4,265 pounds per day. It is now 781.

Total iron, 9,674 pounds per day in 1962. This has now been reduced to 425. And as indicated, this will also be involved in a further reduction.

Commonwealth Edison Company. A one million K.W. fossil fuel plant located north of Waukegan. This plant utilizes 1 million gallons per minute of lake water for cooling purposes, which all flow is returned to Lake Michigan. The heat in the returned flow to the lake is apparently dissipated within 600 feet of the outfall.

Fansteel. Processors of tungsten, molybdenum, tantalum, and producers of electric contacts, rectifiers, capacitors and chemical plant equipment. Neutralized waste, 0.20 MGD, from the North Plant discharged to Pettibone Creek at 22nd Street, has resulted in white deposits in the creek. Previously, the effluent from the neutralization system was within Sanitary Water Board limits. Discharge from the South Plant contains nickel, copper and cyanide concentrations on occasion which exceed the Sanitary Water Board criteria. In-plant modifications and process changes are being made to eliminate all pollutional discharges. Fansteel is proposing to divert waste flows to the North Shore sanitary system and to eliminate discharge to the lake. Diversion or necessary internal improvements will be completed prior to 1972.

Outboard Marine Corporation, which is the Johnson Motors. Effluent from oil interceptors discharged to Waukegan Harbor, and through ditches to the lake, meets effluent limits. Plating wastes are discharged to the North Shore sanitary treatment works.

Chicago Hardware and Foundry. All industrial waste flow was diverted during 1969 from Pettibone Creek to the North Shore Sanitary District system.

Johns Manville. The closed system is now in operation and they have no discharge to Lake Michigan.

U. S. Steel Corporation-South Works, the one at 84th Street on the lake. The company did not complete treatment facilities improvements in compliance with the September 30, 1969, deadline established by the Sanitary Water Board water quality standards and approved by the Department of the Interior. On October 7, 1969, which was seven days after the deadline, the Sanitary Water Board of Illinois requested the Attorney General of Illinois to file for appropriate legal action. That legal action involved penalties, mandamus and injunction. A lawsuit was also filed by the Metropolitan Sanitary District of Greater Chicago in the Circuit Court of Cook County. A temporary injunction has been obtained and the District is seeking a permanent injunction.

U. S. Steel proposes to recycle wastewater in its structural mill system by May 1, 1972. Improvements to the rolling mill scale pits are scheduled for

September 1, 1970, completion. Elimination of No. 9 outfall to Lake Michigan by recycling of blast furnace gas wash water is scheduled for completion November 1, 1970. Start-up of the Central Treatment Plant is scheduled for December 31, 1970.

U. S. Steel is scheduled to be in compliance with the effluent guidelines by December 31, 1970.

I might say at this point, we were and have been and still are somewhat concerned--let's correct the record, eliminate somewhat--we are concerned. We requested the Federal Government to join us in our legal action against this and several other polluters in that area inasmuch as we felt there were violations of the Federal-State water quality standards.

I will say this, I seldom rise to the defense of the Federal Water Pollution Control Administration, but it is my impression that the Federal Water Pollution Control Administration would like to join us, but--this is the subject of correspondence--that the Justice Department was reluctant, and I believe I am quoting correctly, reluctant to join the State in the legal action for the violation of State-Federal water quality standards. I might say that this came as quite a surprise to us because we had anticipated on our own anticipation that whenever a Federal-State water quality standard and a deadline had been violated that we would be joined by the Federal Government in any legal action that we took. I hope this still works out, but at the present time Illinois has been denied this action that we have requested and I do want to say from information that we have this is a decision of the Department of Justice rather than the Federal Water Pollution Control Administration.

Water filter plant backwash. Twelve municipal and two military establishment water supply plants in Illinois discharge filter backwash water to Lake Michigan. Responsible municipal officials were advised by the Illinois Sanitary Water Board, October 1969, that backwash water had to receive adequate treatment by July 1, 1972, if discharge to the lake is to be continued. The Federal Water Pollution Control Administration was requested to secure compliance by the military establishments.

I would hope that in the reports from the other

States we would include the actions that the other States are taking to remove backwash water going into Lake Michigan, that is filter backwash water, from their water treatment plants along the lake. I know this raises a number of moot questions, but we think that this is a waste that should be eliminated.

3. Submission of municipalities and industries discharging wastewater to Lake Michigan Basin.

There has been no change in this list since submitted in June 1968, except that the discharges of Johns Manville Company and Chicago Hardware and Iron Foundry have been eliminated from the lake.

4. Provide continuous disinfection throughout the year--I want to repeat that, this is a recommendation--provide continuous disinfection throughout the year of all municipal waste treatment plant effluents. This is Illinois' statement following.

All municipal effluents currently discharged to Lake Michigan are and have been disinfected since May 1968. In addition, the North Shore Sanitary District is constructing interim chlorination facilities for the disinfection during the 1970 bathing season of all storm overflows from Lake Bluff, Lake Forest and Highland Park sanitary sewer systems.

I want to pause and interject this here, and this is one of the reasons that I was concerned and I admit quite surprised yesterday to learn the volumes of unchlorinated sewage effluent that was going into Lake Michigan from Milwaukee. Several of our beaches were closed last year on the north shore. It was hoped that by disinfecting the stormwater overflow this summer that this could relieve the situation sufficiently and temporarily until we take everything out of the lake so that our beaches could meet the bacterial requirements, and I want to say here just so that I am on public record, we are requesting and will request the Federal Water Pollution Control Administration, based on the statement yesterday, to make an investigation to determine whether the unchlorinated effluent from Milwaukee is reaching Illinois. If it is, it is interstate water pollution and I think comes under the jurisdiction not only of this conference but under the jurisdiction of the Federal Water Pollution Control Administration with some responsibility to take some action on this particular situation.

I might say we are real concerned about this particular situation that frankly I hadn't known existed in this magnitude until yesterday.

Unified collection systems to be encouraged.

All urban areas in Illinois in the Lake Michigan watershed are served by the North Shore Sanitary District or the Metropolitan Sanitary District.

Install adjustable overflows, No. 6, regulating devices on existing combined sewers.

Combined sewers with three overflow structures serve very limited areas in Waukegan and Lake Bluff. The remainder of the North Shore Sanitary District is served by separate storm and sanitary sewers and industrial waste sewers. The current project by the North Shore Sanitary District will provide for the elimination of these overflow structures and for sedimentation and chlorination of all sanitary sewer overflows before discharge to the lake.

I want to amplify this latter statement. With the removal of all discharges from Lake Michigan, we have asked the North Shore Sanitary District to keep intact and in operating condition their existing primary plants and the chlorination facilities in the event that there is a power shortage so that their pumping stations cannot pump the flow and the effluent over to the other watershed out of Lake Michigan or in the event of an excessive rain when the pumping facilities would be overtaxed. And in those emergency conditions, we would expect these flows to go into the existing plants that would be kept in operating condition so that even in emergency conditions and overflow conditions, where it would necessitate because of power outages or excessive rains, that the flows would still be receiving primary treatment and chlorination.

Combined sewers. Separate all combined sewers.

There are no sanitary or combined sewer overflows to Lake Michigan in Cook County. There are 170 outfalls from storm sewers which serve very limited areas in Cook County along the lake. The Metropolitan Sanitary District of Greater Chicago has adopted an ordinance during October 1969 prohibiting the discharge of wastes of any kind to Lake Michigan and has established a program to prohibit installation of new outfalls of any kind and to eliminate all existing outfalls as soon as possible.

C. W. Klassen

I want to comment on this for just a minute for those of you who might not be aware of what is implied here.

The Sanitary District ordinance prohibits wastes of any kind, and this has been interpreted to mean and to include the downspouts, as an example, from apartment buildings along the lake and the flow from streets and parking lots along the lake going into Lake Michigan. Recently there was a request for a variance to this ordinance where the downspouts from an apartment building were emptying into a tributary into the lake, and this was denied, temporarily at least.

The point I want to bring before the conference is that at this session a representative of the Federal Water Pollution Control Administration was there and advocated this policy--I am not criticizing this at all--they advocated this policy and the Chicago Sanitary District received a letter memorandum on January 12 from Federal Water Pollution Control Administration in which they supported this.

On March 17th we wrote to Secretary Klein pointing this out, and not criticizing the policy, but merely pointing out that if this policy is being imposed on Illinois by the Federal Water Pollution Control Administration, then we are asking that this same policy be imposed on Indiana, Wisconsin and Michigan, because if Illinois is going to be prohibited from any discharge to the lake, for example from downspouts from apartment buildings along the lake or wash from roads and parking lots along the lake, then the same should be imposed on every one of the other States. And I bring this out at this conference because this is something that possibly should be discussed at some time in the future.

MR. STEIN: Mr. Klassen, I don't want to interrupt, but would you at this point care to bring up McCormick Place and discuss that?

MR. KLASSEN: Would I care to bring up McCormick Place?

MR. STEIN: Yes.

MR. KLASSEN: In what respect?

MR. STEIN: With this policy.

MR. KLASSEN: With what?

MR. STEIN: With this separate the combined sewers and the downspouts.

MR. KLASSEN: In McCormick Place, the objection to the discharges from McCormick Place, as I understand it, and that is within the Chicago Sanitary District jurisdiction and not the State, is the wash from the parking lot, the downspouts from the roof and the discharge from their air conditioning system.

MR. STEIN: Yes. But is it--

MR. KLASSEN: And understand we are not objecting to this policy, but if it is being imposed on the city of Chicago then we think it should be uniform throughout the basin if we are all going to share in the saving of Lake Michigan.

MR. STEIN: I understand your point and I don't want to get into a discussion here, just getting the facts, because I see you have got industries from the Chicago district.

But as I understand it, and I may be wrong on this, McCormick Place was just redone after the fire.

MR. KLASSEN: That is right.

MR. STEIN: And they built these with the parking lot, the air conditioning and the roof discharging into the lake, and when you talk about this denial of the downspout from the apartment house, any change won't take in the McCormick Place operation for about two years. In other words, rain that hits the McCormick Place will go into the lake even though rain that hits anywhere else in Chicago may be diverted.

MR. KLASSEN: That is right. That is right.

MR. STEIN: That is all.

MR. KLASSEN: That is right. And since we are getting into details, what this would require is a sewer along Lake Michigan to collect all of the surface wash from parking lots, the outer drive, from all the downspouts, and collect all these and put it into the Chicago sewer system. And I can't quite rationalize this, because if it goes in the sewer system this is going to add to the overflow from the combined sewers and it is just a question of which is going to be more detrimental from a pollution standpoint, the overflow from a combined sewer or the natural surface water that normally would go into the lake.

Understand, I want to repeat that we obviously are not objecting to a real tough policy to keep everything out of Lake Michigan, but I want to reemphasize that if it is imposed on one State it ought to be imposed on all of the States, because I am sure Indiana, Wisconsin and Michigan want to share with Illinois the honor of saving Lake Michigan. I don't mean to put words in their mouth. (Laughter.)

MR. STEIN: No. We will hold the discussion until later because there may be other points of view on this.

MR. KLASSEN: That is right. That is right.

MR. STEIN: All right.

MR. KLASSEN: Encourage the discharge of treatable industrial wastes to municipal sewers, and I will hurry through this.

Abbott Laboratories, Outboard Marine Corporation, Fansteel Metallurgical Corporation, U. S. Steel Waukegan Works are negotiating with the North Shore Sanitary District to discharge pretreated industrial wastes to District facilities. Chicago Hardware and Foundry recently diverted all flows to the North Shore system.

Provide continuous disinfection of industrial effluents.

Abbott Laboratories pasteurizes their effluent. They have some difficulties there with some of their organisms, I understand, so they pasteurize their effluent. Chlorination facilities are also available. Other industrial effluents do not contain pathogenic organisms.

No. 10. Appoint a special committee on nuclear discharges and thermal pollution aspects of powerplants and reactors.

Illinois representatives were appointed, attended all meetings of the committee and participated in the preparation of reports submitted to the 1969 session. Apparently this committee has not been called upon to report at this conference.

And I want to say for the purposes of the record that no permits have been issued at this point to the Zion Nuclear Powerplant, although we expect, as I indicated yesterday, to get into this area very soon.

Dumping of polluted material into Lake Michigan to be prohibited.

Senate Bill 1794 (sic) passed by the Illinois State Legislature, approved October 30, 1967, stipulates that no pollutional material can be deposited into the lake and that permits to dump can be issued by the Department of Public Works only with the concurrence of the Sanitary Water Board. This policv has been and is being implemented in a positive manner. No permits for depositing pollutional material in Lake Michigan have been issued since the last session of this conference. And I mention this, the last session nor previous to that.

Then a reference to alewife.

Watercraft regulations. Illinois has now in effect, effective January 1, 1970, its rules and regulations prohibiting the discharge of any waste material from watercraft.

The city of Chicago during 1969 continued enforcement of their ordinance prohibiting discharge of sewage from watercraft. Chicago Park District is cooperating and I think that later Mr. Poston, for the city of Chicago, will further amplify this.

I might say we are concerned, because I think Illinois is the only State--I stand corrected on this if this is not true--that has not eliminated from our jurisdiction any watercraft. Our ordinances, our regulations, include all watercraft, including those of foreign registry. And this may pose a problem, but we are in the process now of trying to work out proper enforcement procedures for foreign vessels and also vessels that will pass in Illinois water on their way to another State.

All of the Illinois area in the Lake Michigan watershed is within the North Shore Sanitary District or the Metropolitan Sanitary District and only minor areas are not served by a public sewer system and sewage treatment works, but action is continuing to bring these areas into public facilities.

Then I will hurry along here.

The Pesticides Committee, we know of its report. Since the last conference Illinois' pesticides control law has gone into effect so far as DDT is concerned. The sale of DDT is prohibited in Illinois except on permit from the Department of Agriculture or the Department of Public Health and there have been two permits issued for the use of DDT since January by the Department of Public Health, two pest operators in southern Illinois. One was for mouse control. I understand that this is one of the most effective means of controlling mice. And the other is for bat control. They had a bat problem.

No. 16 with reference to the Department of Agriculture, we concur with that.

Monitoring. During 1969 the Illinois Sanitary Water Board staff monitored Lake Michigan beaches and open water. The results of this will be in a publication that is in preparation now.

However, the report includes shore water monitoring in detail. The total coliform and streptococcus counts exceeded the criteria limits more than 50 percent of the time at 26 beaches.

Shore water at all beaches did not comply with the annual average criteria for phosphates and surfactants.

The shore water complied with the temperature requirements and the phenol-like substances and cyanides and the ammonia nitrogen criteria was exceeded at the 26 beaches.

Then we have listed here in detail our open water monitoring, which I won't go into detail on. This will all be a matter of record.

No. 21. The discharge of visual oil to Lake

Michigan is to be eliminated.

Suit was instituted by the Metropolitan Sanitary District of Greater Chicago against the U. S. Steel Corporation. There were no other discharges requiring action.

Research, oil control, the support of Federal grants is a matter of public record. Last year Illinois received its $42 million from the allocation. $21 million went to the Chicago Sanitary District and $10.6 million went to the North Shore Sanitary District because of its high priority.

That concludes, Mr. Chairman, our report.

(Which said report and attached documents is as follows:)

ILLINOIS SANITARY WATER BOARD

PRESENTATION

LAKE MICHIGAN--FOUR STATE CONFERENCE

THIRD SESSION

MARCH 31, 1970

MILWAUKEE, WISCONSIN

By: C. W. Klassen, Technical Secretary
Conferee for State of Illinois

The "Summary of Conference (First Session), Pollution of Lake Michigan and Its Tributary Basin (Wisconsin-Illinois-Indiana-Michigan)," issued subsequent to the several meetings held by the Conferees during January - March, 1968, presented twenty-six recommendations adopted by the Conferees representing the Federal government and the four Lake Michigan states.

The following action has been taken by the State of Illinois with respect to these recommendations:

1. Provide Municipal Waste Treatment to Comply with Approved Water Quality Standards and to Provide 80% Reduction in Total Phosphorous, All by December 1972.

All municipal sewage treatment plant effluent discharges to Lake Michigan in Illinois are within the North Shore Sanitary District, which extends from the Illinois-Wisconsin State line south to Cook County. All municipalities in Cook County adjacent to Lake Michigan are served by the Metropolitan Sanitary District of Greater Chicago sewage treatment facilities which discharge to the Illinois River watershed.

The North Shore Sanitary District program to remove all effluent discharges from Lake Michigan, as reported during the last session of this conference, is now under construction. A project originally estimated to cost $60,000,000, provides for complete diversion. The first phase, for which the North Shore Sanitary District secured voter approval for a General Obligation Bond Issue of $35,000,000, will provide for the diversion of the Lake Bluff, Lake Forest and Highland Park - (Ravine Drive, Park Avenue and Cary Avenue) primary plant effluents from Lake Michigan to the Clavey Road Sewage Treatment Plant which discharges to the Skokie River. This first phase provides for diversion of the North Chicago sewage treatment works effluent to a proposed sewage treatment plant at Gurnee, and for expansion and improvement of the Waukegan sewage treatment works, including phosphate reduction, all by 1972. The Waukegan sewage treatment works will continue to discharge to the Lake, unless and until the District can fund the entire estimated $60,000,000 project.

The District's application for a Federal grant for sewage treatment works was certified to the Federal Water Pollution Control Administration during 1970 for a grant of $10,628,000.

The District's original plans called for all improvements in the $35,000,000 project to be under construction in 1970 and completed by July, 1972. Unexpected problems in securing zoning approvals and easements have resulted in revision of scheduled completion dates, with anticipated delays of as much as one year.

Attached and a part of this presentation is a detailed status report prepared by the North Shore Sanitary District, dated March 16, 1970.

PERMITS ISSUED TO DATE BY THE SANITARY WATER BOARD FOR THE NORTH SHORE SANITARY DIST. IMPROVEMENT PROGRAM:

1. Permit #1969-HB-230, dated April 18, 1969, Lake Forest 24-inch sewer and force main. Project complete.
2. Permit #1969-HB-621, dated September 19, 1969 and Supplemental Permit dated November 14, 1969, Lake Forest force main, Section #2, Div. F-7B. Contract signed - construction started February 15, 1970.
3. Permit #1969-IA-738, dated October 23, 1969 and Supplemental Permit dated December 18, 1969, Lake Forest pump station. Contract ready to be signed - construction started February 15, 1970.
4. Permit #1969-DB-679, dated October 6, 1969, Clavey Road, lagoon and chlorination. Held in abeyance pending outcome of zoning hearing (delayed by odor nuisance complaints). Will take eleven months to construct.

5. Permit #1970-DB-96, dated February 20, 1970, interim storm water chlorination facilities for Lake Bluff, Park Avenue, Ravine Drive and Cary Avenue sewage treatment facilities. Contract for construction signed March 12, 1970.
6. Permit #1970-DB-117, dated March 2, 1970, Clavey Road, sludge thickeners and anaerobic sludge digester.
7. Permit #1970-DB-160, dated March 20, 1970, Waukegan sludge lagoon. Construction to start April, 1970.

****

2. Industries to Provide Adequate Treatment Prior to Discharge to Lake by 1972.

Domestic wastes from all industries in the North Chicago - Waukegan area are tributary to the North Shore Sanitary District sewage treatment plants.

All industries located in the North Chicago - Waukegan industrial area discharge process wastes to sewers which are tributary to the North Chicago or Waukegan sewage treatment works operated by the North Shore Sanitary District, except as listed below.

The following is a summary of the activities of these industries and the quantity and strength of their waste discharges:

A. ABBOTT LABORATORIES - Manufactures antibiotics, chemical drugs and pharmaceuticals, resulting in extremely complex waste treatment problems. The industrial waste treatment works processed an average daily flow of 658,000 gallons during February, 1970, achieving 88% reduction in BOD and 90% removal of suspended solids.

The effluent from the industrial waste treatment plant is combined with other process water from the Abbott complex; the combined effluent is monitored for compliance with Sanitary Water Board criteria. Combined flows average 12.2 mg/d. The BOD of the combined flow averaged 57 mg/l for February while the suspended solids averaged 100 mg/l. Sanitary Water Board guidelines relating to discharges to Lake Michigan, included in SWB-7, are: (a) BOD reduction of at least 85% in the treatment plant, and; (b) final effluent not to exceed 40 mg/l and 45 mg/l BOD and suspended solids, respectively.

Inasmuch as the question of "effluent dilution" has been associated with this industry, a brief discussion on this point is deemed desirable.

Technical Release 20-22 of the Illinois Sanitary Water Board permits spent industrial cooling water to be mixed with effluent from an industrial secondary type treatment plant having at least 80% BOD removal to produce a combined effluent BOD concentration of 40 ppm or below. This is often referred to as "dilution." The word dilution carries with it the connotation that such an industrial firm could be mixing lake water with its effluent for the sole purpose of making its performance look better than it actually is. This would be inconsistent with the Illinois Sanitary Water Board standards, and Abbott does not engage in this practice.

At this plant there are three types of waste streams: (1) The sanitary wastes, and these are handled by the North Shore Sanitary District. (2) Process waste stream, which requires secondary treatment. (3) Spent raw water stream, which consists mainly of cooling water, and includes rain water since it is collected and transported in the plant storm water sewer systems.

A plant may choose to combine both of the latter streams into one relatively dilute waste stream, which can then be sent through a secondary treatment plant, or as an alternate to keep the two streams separated until after the process waste stream has undergone secondary treatment. The two streams can then be combined prior to final discharge into the Lake.

The quality of the final effluent would essentially be the same in both cases. If anything, the absolute degree of BOD removal should be greater in the second alternate, since the efficiency of the treatment plant is likely to be higher when handling a smaller volume of more concentrated waste.

The operation at this plant was designed to maximize efficiency by diverting around the treatment plant those waters which do not require sophisticated treatment. It is this practice which some have misleadingly described as "dilution." The Sanitary Water Board criteria and technical bulletins contemplate that the stated standards shall be met by measuring the total effluent from a plant, and not each of the many individual streams which might come from any location within the plant.

This point is raised at this conference with the idea that if these procedures now followed in Illinois are to be modified, any such modification should be applicable to all industrial discharges within the Lake Michigan basin.

An industrial waste treatment works improvement program was completed during April, 1969. After a shakedown period, it was found that the final effluent generally complied with the BOD limits; however, solids carry-over resulted in suspended solids concentrations above the prescribed limits. Abbott plans to start construction of a $2,500,000 improvement project in the immediate future to attain the consistent, efficient and reliable performance of the treatment facilities needed to comply with Sanitary Water Board effluent quality limits. Completion of these improvements is scheduled for December, 1970. This program is described in the March 12, 1970 report by the industry, made a part of this presentation. (Appended).

Abbott is negotiating with the North Shore Sanitary District for diversion of their final effluent from Lake Michigan to the District's facilities which will discharge to the Illinois River watershed.

B. U.S. STEEL - WAUKEGAN WORKS - Produces carbon and stainless steel springs, coated wire and wire for manufacturers.

This plant utilizes approximately 3.5 MGD of Lake water which is returned via five outfall sewers. The wastes from this plant are generally in compliance with Sanitary Water Board guidelines for iron and pH, with only occasional samples exceeding the guideiines. U. S. Steel presently hauls 30,000 gallons of waste acid to their Gary, Indiana plant for disposal by deep well injection. A new stationary rinse operation, recently completed, should materially further reduce iron discharge. Continuous pH monitoring is to be installed on four outfalls. A comprehensive engineering study to propose refinements necessary to insure continuous compliance with Sanitary Water Board guidelines is underway and should be complete by December of 1970. The reduction from 1962 to date in pollutional discharges is shown in the following comparison:

	February, 1962	February, 1968	January, 1970
Total Flow, gallons per day	5,860,000	3,440,000	2,807,000
Total Solids, lbs. per day	35,000	25,600	9,640
Suspended Solids, lbs.per day	4,265	3,837	781
Total Iron, lbs. per day	9,674	902	425

****

C. COMMONWEALTH EDISON COMPANY - A 1.09 million K. W. fossil fuel plant located north of Waukegan. This plant utilizes one million gallons per minute of Lake water for cooling purposes with all flow returned to the Lake. The heat in the returned flow to the Lake is apparently dissipated within 600 feet of the outfall.

D. FANSTEEL METALLURGICAL CORPORATION - Processors of tungsten, molybdenum, tantalum, and producers of electric contacts, rectifiers, capacitors and chemical plant equipment. Neutralized waste (0.20 MGD) from the North Plant discharged to Pettibone Creek at 22nd Street, has resulted in white deposits in the Creek. Previously, the effluent from the neutralization system was within Sanitary Water Board limits. Discharge from the South plant (33,000 gallons per day) contains nickel, copper and cyanide concentrations which, on occasion, exceeds Sanitary Water Board criteria. In-plant modifications and process changes are being made to eliminate pollutional discharges. Fansteel is proposing to divert waste flows to the North Shore Sanitary District system and to thus eliminate discharge to the Lake. Diversion or necessary internal improvements will be complete prior to 1972.

E. OUTBOARD MARINE CORPORATION - (Includes Johnson Motors) - Effluent from oil interceptors, discharged to Waukegan Harbor and thru ditch to the Lake, meets effluent limits. Plating wastes are discharged to the North Shore Sanitary District treatment works.

F. CHICAGO HARDWARE AND FOUNDRY COMPANY - All industrial waste flow was diverted during 1969 from Pettibone Creek to the North Shore Sanitary District system.

G. JOHNS MANVILLE CORPORATION - Closed system is in operation with no discharge to Lake Michigan.

H. U.S. STEEL CORPORATION - SOUTH WORKS - The company did not complete treatment facilities improvements in compliance with the September 30, 1969 deadline established by Sanitary Water Board Water Quality Standards. On October 7, 1969, the Sanitary Water Board requested the Attorney General of Illinois to file for appropriate legal action. A lawsuit was also filed by the Metropolitan Sanitary District of Greater Chicago in Circuit Court of Cook County. A temporary injunction has been obtained and the District is seeking a permanent injunction.

U. S. Steel proposes to recycle waste water in its structural mill system by May 1, 1972. Improvements to the rolling mill scale pits are scheduled for September 1, 1970 completion. Elimination of No. 9 outfall to Lake Michigan by recycle of blast furnace gas wash water is scheduled for November 1, 1970. Start-up of the Central Treatment Plant is scheduled for December 31, 1970.

U. S. Steel is scheduled to be in compliance with effluent guidelines by December 31, 1970.

I. WATER FILTER PLANT BACKWASH - Twelve municipal and two military establishment water supply plants in Illinois discharge filter backwash water to Lake Michigan. Responsible municipal officials were advised by the Illinois Sanitary Water Board during October, 1969 that backwash water had to receive adequate treatment by July of 1972 if discharge to the Lake is to be continued. The Federal Water Pollution Control Administration was requested to secure compliance by the military establishments.

3. Submit List of Municipalities and Industries Discharging Wastewater to the Lake Michigan Basin:

There is no change in the list of municipalities and industries discharging wastewater to the Lake Michigan Basin submitted in June, 1968 to the Federal Water Pollution Control Administration except that discharges from Johns Manville Company and Chicago Hardware and Foundry Company have been eliminated.

4. Provide Continuous Disinfection Throughout the Year for All Municipal Waste Treatment Plant Effluents:

All municipal effluents currently discharged to Lake Michigan have been disinfected since May, 1968. The North Shore Sanitary District is constructing interim chlorination facilities for disinfection during the 1970 bathing season of all storm overflows from the Lake Bluff, Lake Forest and Highland Park sanitary sewer systems to the Lake.

5. Unified Collection Systems to be Encouraged:

All urban areas in Illinois in the Lake Michigan watershed are served by the North Shore Sanitary District or the Metropolitan Sanitary District of Greater Chicago.

6. Install Adjustable Overflow Regulating Devices on Existing Combined Sewer Systems:

Combined sewers with three overflow structures serve very limited areas in Waukegan and Lake Bluff. The remainder of the North Shore Sanitary District is served by separate storm and sanitary - industrial waste sewer systems. The current project by the North Shore Sanitary District will provide for elimination of these overflow structures and for sedimentation and chlorination of all sanitary sewer overflows before discharge to Lake Michigan. Bypass of flows, in excess of diversion capacity from Lake Bluff, Lake Forest and Highland Park, will occur only during very intense storms.

7. Separate All Combined Sewers: (See Recommendation No. 6)

There are no sanitary or combined sewer overflows to Lake Michigan in Cook County. There are about 170 outfalls from storm sewers which serve very limited areas in Cook County along the Lake. The Metropolitan Sanitary District of Greater Chicago has adopted an Ordinance during October, 1969 prohibiting the discharge of wastes of any kind to Lake Michigan and has established a program to prohibit installation of new outfalls of any kind and to eliminate all existing outfalls as soon as possible.

8. Encourage Discharge of Treatable Industrial Wastes to Municipal Sewer System:

Abbott Laboratories, Outboard Marine Corporation, Fansteel Metallurgical Corp. and U. S. Steel Waukegan Works, are negotiating with North Shore Sanitary District to discharge pre-treated industrial wastes to District facilities. Chicago Hardware and Foundry recently diverted all flows to North Shore Sanitary District system.

9. Provide Continuous Disinfection of Industrial Effluents:

Abbott Laboratories pasteurizes effluent. Chlorination facilities are also available. Other industrial effluents do not contain pathogenic or sewage indicator organisms.

10. Appoint Special Committee on Nuclear Discharges and Thermal Pollution Aspects of Power Plants and Reactors:

Illinois representatives were appointed, attended all meetings of the Committee and participated in preparation of the report which was submitted to the Conferees at the 1969 session. Apparently this Committee has not been called upon to report at this Conference.

11. Dumping of Polluted Material into Lake Michigan to be Prohibited:

Senate Bill 1794 passed by the Illinois State Legislature, approved by the Governor on October 30, 1967, stipulates that only non-pollutional material can be deposited in the Lake and that permits to dump can be issued by the Department of Public Works and Buildings only upon concurrence by the Sanitary Water Board that pollution will not be caused. This policy has been, and is, being implemented in a positive manner; no permits for depositing pollutional material in Lake Michigan have been issued since the last session of this Conference.

12. Removal of Dead Alewives:

There was no problem during 1969.

13. Watercraft Wastes:

Rules and Regulations, SWB-19, "Disposal of Sewage and Wastes from Watercraft," adopted by the Illinois Sanitary Water Board July 2, 1968, became effective on January 1, 1970. Said Rules and Regulations conform to uniform standards agreed upon by representatives of the Conferees who met subsequent to the Enforcement Conference First Session. Procedures for enforcing these requirements are being developed.

The City of Chicago has, during 1969, continued enforcement of their ordinance prohibiting discharge of sewage from watercraft unless adequately treated. The Chicago Park District has cooperated by requiring watercraft sewage and other waste facilities to be in compliance with this ordinance prior to issuance of permits for mooring space in District harbors. The District has also provided pump-out facilities for sewage holding tanks.

14. Promote Use of Area-Wide Sewage Facilities - Discourage Small Treatment Plant - Eliminate Septic Systems:

All of the Illinois area in the Lake Michigan watershed is within the North Shore Sanitary District or the Metropolitan Sanitary District of Greater Chicago. Only minor areas are not served by a public sewer system and sewage treatment works. Continuing action is being taken to serve these areas with public facilities.

15. Pesticides Committee and Regulation of Commercial Applications:

"An Act to Provide for the Labeling of Pesticides and to Prevent the Contamination of Water and Environment by Regulating, Restricting or Prohibiting the Sale, Use or Application of Pesticides," enacted by the Illinois General Assembly, was approved June 25, 1969. Under this "Pesticide Control Law," it is the duty of the Illinois Department of Public Health to enforce the provisions in the Act for the control of pesticides as they relate to the health of the public, including the retail sale of pesticides for household use, vector control (including mosquito and fly control, whether by pest control operators or governmental agencies), and the control of disease-carrying insects and related animals, rodents and birds and other mammals. Pursuant to this duty, the Illinois Department of Public Health issued regulations, effective January 1, 1970, prohibiting the sale or use of DDT except by special permit.

The Conference Pesticides Committee recommended monitoring for specific pesticides in Lake Michigan water and fish, in flow to Lake Michigan from major tributaries, in biological life in other tributaries, and in the effluent from the sewage treatment plants discharging to Lake Michigan in Lake County. A program to implement these recommendations, established June 2, 1969, was not implemented due to the lack of funding and thus the lack of laboratory equipment and personnel. As of this date, the project has been funded, equipment has been ordered and personnel is being recruited. This latter action was taken as soon as procedural problems relating to a Federal grant were resolved.

16. Prepare Report on Programs to Prevent Pollution from Agricultural Land Use: Assigned by Conferees to the U. S. Department of Agriculture.

17. Committee on Monitoring:

The appointed Illinois representative attended all meetings of the Committee and participated in preparation of the report which was submitted to the Conferees at the Second Session. Apparently, this Committee has not been called upon to report at this Conference.

During 1969, Illinois Sanitary Water Board staff monitored Lake Michigan beach and open water. Samples were collected at 30 beaches and from the intakes at five water filtration plants. The results of the analyses were evaluated on the basis of the very stringent, "Water Quality Standards for Lake Michigan - Rules and Regulations SWB-7," adopted by the Illinois Sanitary Water Board and approved by the U. S. Department of the Interior January 27, 1968.

SHORE WATER MONITORING: The following general conclusions are based on evaluation of results of analyses of the Shore water samples collected during 1969:

A. Total Coliform and Fecal Streptococci counts exceeded the criteria limits more than 50% of the time at 26 beaches.

B. Shore water at all beaches did not comply with annual average criteria limits for phosphates and surfactants (MBAS), unchanged from 1968.

C. Shore water complied with the temperature limit and the annual average criteria for phenol-like substances and cyanide.

D. The ammonia nitrogen criteria for shore water was exceeded at 26 beaches, as compared to only eight during 1968.

BEACH WATER MONITORING: The following general conclusions are based on evaluation of results of analyses of the open water samples collected during 1969:

A. Total Coliform Bacteria counts for open water complied with the annual average and single value standards at the five intakes sampled.

Fecal Streptococci counts complied with the standards, except for one of the monthly samples at Waukegan and at Highland Park. There was a slight improvement in bacterial water quality as compared to 1968.

B. The Ammonia Nitrogen annual average criteria was exceeded at all open water intakes, except at the Chicago South plant, unchanged from 1968.

C. Phosphate concentrations remain unchanged from 1968 and continued to exceed criteria limits at all open water intakes.

D. Iron concentrations complied with criteria limits at all open water intakes during 1969.

E. Phenol-like Substance, cyanide and sulfate concentrations were within the criteria limits during 1969, an improvement over 1968. The chloride concentrations exceeded the criteria limits at all intakes during 1969.

18. Prepare Inventory of Potential Oil and Other Hazardous Material Spill Sites: Submitted July 31, 1968; no further action required during 1969.

19. Water Quality Analyses (Including Planktonic Algae Counts) by Water Filtration Plants:

This is being done at the designated plants (Evanston, Chicago Central and Chicago South).

20. Monitoring by Coast Guard:

Illinois supports recommendation.

21. Discharge of Visual Oil to Lake Michigan to be Eliminated:

Suit was instituted by the Metropolitan Sanitary District of Greater Chicago against U. S. Steel South Works. There were no other discharges requiring action during 1969.

22. Research:

Illinois participated to the extent that finances and personnel permitted.

23. Strengthen Federal Legislation for Control of Oil Pollution on Lake Michigan:

Illinois supports recommendation.

24. Full Appropriation of Federal Grant Authorizations be Made by Congress:

Illinois supports recommendation.

25.

and

26. Relate to reconvening of the Conferees.

BOARD OF TRUSTEES
president August P. Cepon, Waukegan
treasurer, Robert P. Will, Zion
William T. Jones, Highland Park
Ross A. Granna, Waukegan
Donald L. Wylie, Lake Forest

north shore sanitary district

GENERAL MANAGER, RAYMOND E. ANDERSON / DAHRINGER ROAD, WAUKEGAN, ILLINOIS 60085 / Telephone: 312/623-6060

[redacted]

SUPERINTENDENT OF OPERATIONS
Joseph J. Debevic

RECEIVED

MAR 17 1970

DIVISION OF SANITARY ENGINEERING
ILLINOIS DEPT. OF PUBLIC HEALTH

Mr. Clarence W. Klassen
Technical Secretary
Illinois Sanitary Water Board
616 State Office Building
Springfield, Illinois 62706

Subject: Lake Michigan
Federal Enforcement Conference

Dear Mr. Klassen:

Thank you for your letter of March 4, 1970 advising of the forthcoming Federal-State conference in Milwaukee on "Actions being taken to clean up Lake Michigan." We are planning to attend the conference and, if you desire, would be willing to present a status report on our Sewage Works Improvements project.

In response to your request, we enclose herewith four copies of the latest revision to the project schedule for our currently funded program. This program provides for the removal from Lake Michigan of all sewage discharges from North Chicago, Lake Bluff, Lake Forest and the three plants in Highland Park. Insufficient funding prevents establishment of a date for removal of treated Waukegan effluent from the lake at this time.

The current program will, however, provide for storm water treatment at Waukegan and from Lake Bluff south to Highland Park. Overflow treatment facilities are included under Division P-3B at Waukegan. The existing primary treatment plants at Lake Bluff, Lake Forest and Cary Avenue in Highland Park will be modified, as part of the pumping station construction projects, to provide sedimentation and chlorination of storm water overflows before discharge to the lake.

On March 12, 1970, we entered into a contract for the construction of Interim Chlorination Facilities which will provide for chlorination of all storm overflows to the lake from Lake Bluff south to Highland Park for the 1970 bathing season.

The enclosed project schedule is believed to represent a realistic appraisal of the current status of our program. The fulfillment of this schedule is dependent, to a large extent, however, upon the timely availability of lands and rights-of-way. Phase 1 of our project, the Clavey Road Sewage Treatment Plant and construction of those works necessary to remove the Lake Bluff, Lake Forest and

Highland Park effluents from the lake, is roughly one year behind schedule. The Gurnee Sewage Treatment Plant project is about nine months behind schedule. The other elements of the project are proceeding in general accordance with their original schedules.

A detailed summary of the causes of delays already encountered and of sources of possible future delays is as follows:

Division	Cause of Delay
F-6A, Lake Bluff Force Main	Resolution with Lake County Highway Department and Illinois Division of Highways of future use of Illinois Highway 176 ROW as a possible future freeway route. Highway studies are not yet complete for its development.
PS-6, Lake Bluff Pumping Station	Project delayed by a civil suit brought by property owners to prevent use of originally proposed park site for pumping station. Project is approximately one year behind schedule.
S-8A, S-8B, S-8C and S-8D, Highland Park Lake Front Sewer and Sewer Protection Works	Right-of-way acquisition not complete. Property owners have expressed concern that sewer construction would aggravate erosion damage associated with high lake levels and have been reluctant to grant easements. Thirty-eight easements are required of which twenty-one are signed, fifteen have been agreed to and four have gone to condemnation.
F-8, Cary Avenue Force Main	Request for easement across John F. Kennedy School property has been tabled by the School Board until the Clavey Road Sewage Treatment Plant zoning question is resolved.
P-11A to P-11G - Projects to expand the Clavey Road Sewage Treatment Plant and provide storm overflow treatment.	Request for a special use permit, originally filed in the spring of 1969, was recommended against, after protracted hearings by the Highland Park Plan Commission. The City Council approved the special use permit in January, 1970, subject to conditions which the Sanitary District considered unreasonable and unacceptable. The District has instituted suit for the issuance of the permit. This matter is scheduled for trial on April 13,

	1970. The attached project schedule assumes settlement of the litigation in time to permit advertising the first Clavey Road contracts on June 1, 1970.
F-4, F-5, North Chicago to Gurnee Force Mains and Sewers.	Negotiations are underway for several easements. One easement involving complicated property ownership will require condemnation. This has been authorized by the N.S.S.D. Board.
PS-5, Upper Skokie Valley Pumping Station	Negotiations are not yet complete for the purchase of site.
P-12A to P-12E, Gurnee Sewage Treatment Plant	Special use permit for site originally selected was denied by Lake County Board of Supervisors. A conditional sale contract has been entered to purchase another site subject to zoning. A decision on the required zoning of the second site is expected in April, 1970.

With regard to the status of negotiations to accept and to treat wastes from industries and military installations, please be advised that the Sanitary District will treat industrial wastes, provided that the wastes do not violate the conditions of Section IV of our "Ordinance Relating to Sewers and Sewer Systems;" and provided that the waste characteristics do not exceed the maximum concentration of chemicals acceptable for discharge into the sewer system, as set forth on page 6 of SWB Technical Release 20-22, Second Edition.

Concerning military installations, you will recall that the Sanitary District has been negotiating with both Great Lakes and Fort Sheridan for the treatment of sewage from these installations by the Sanitary District.

Discussions with Great Lakes first began on May 13, 1968. From then, until December 27, 1969, our engineers, Greeley and Hansen, worked with Navy personnel to determine the feasibility and method of handling Great Lakes sewage. On December 27, 1969, the Board of Trustees of the Sanitary District agreed to begin negotiating with the U. S. Navy for treatment of Great Lakes sewage. Since that time there have been several exchanges of correspondence relating to the matter. We expect that an agreement will be worked out in a few months.

Discussions with Fort Sheridan began in September, 1964. Following preliminary studies by our engineers, the Sanitary District on November 16, 1964, advised the Corps of Engineers that we would consider entering into a contract for the treatment by the Sanitary District of sewage from Fort Sheridan. Early in 1969 there was an exchange of correspondence between the Corps of Engineers and the Sanitary District, reviving the possibility of Sanitary District treatment of Fort Sheridan sewage. On February 25, 1970, the Fifth Army Headquarters made a telephone request to our engineers for a copy of a drawing showing the general arrangement of the sewage works improvements included under the current Sanitary District program.

For your information and use, we are also enclosing four copies of our "Ordinance Relating to Sewers and Sewer Systems".

Please advise if we can furnish additional data for presentation at the Lake Michigan Conference.

Very truly yours,

NORTH SHORE SANITARY DISTRICT

AUGUST P. CEPON
President
Enc.

March 16, 1970

cc: Mr. Benn J. Leland
Mr. M. D. R. Riddell,
Greeley and Hansen

OTT
LABORATORIES NORTH CHICAGO, ILLINOIS 60064

RECEIVED

MAR 13 1970

DIVISION OF SANITARY ENGINEERING
ILLINOIS DEPT. OF PUBLIC HEALTH

March 12, 1970

Mr. Clarence W. Klassen
Chief of Sanitary Eng.
Illinois Dept. of Public Health
535 W. Jefferson
Springfield, Illinois 62706

Dear Mr. Klassen,

As we discussed in our meeting of March 5, 1970 Abbott Laboratories has authorized a $2.5 million program of improvements to the waste treatment facilities at its North Chicago Plant. The improvements are not being made to accomodate expanded production operations, but rather to assure consistency, efficiency and reliability of treatment operations which in turn will meet the Federal-State lake water standards.

Included in the program for improvements for 1970-1971 are:

1. REPLACEMENT OF BUILDINGS F-2 and C-10 BAROMETRIC CONDENSERS:

   Replacement of these condensers with surface type condensers will more efficiently keep the cooling water separate and clean. The condensate from the condensers will be sent to the Abbott treatment plant. We expect these projects to be completed by August, 1970.

2. EQUALIZATION TANKS IMPROVEMENTS:

   This project will increase the capacity of the tanks by 60%, provide for mechanical control of foam, provide new and rearranged piping for better control, and replace the steelwork and enclosures used for odor control. The purpose of the capacity increase is to reduce variations in treatment plant performance due to fluctuations in influent quality or quantity. We are currently out for bids on construction and expect to have this project completed by December, 1970.

3. CONSTRUCT SETTLING TANK No. 2:

   The purpose of this second clarifier is to improve the recovery of suspended solids from the treatment plant effluent. We have hired a consulting engineer to prepare design drawings and expect to complete construction around December, 1970.

4. EFFLUENT FILTRATION:

Abbott Development is studying a number of processes which either involve filtration of the effluent or the use of conditioning methods to improve the settling characteristics of the solids. If successfully developed, effluent filtration or enhancement of solids settling could provide further substantial improvement of plant performance in 1971.

5. INCINERATION - ELECTROSTATIC PRECIPITATOR:

An electrostatic precipitator has been purchased and will be installed on several boilers to provide for the odor-free incineration of miscellaneous waste sludges. Emission standards on particulate matter will be met by the electrostatic precipitator. We expect this unit to be in operation by June, 1970.

6. UPGRADING OF PLANT SEWER SYSTEMS:

Included in these projects are repairs of existing sewers, additions to the chemical sewer system, and revisions to both the chemical and cooling water sewer systems. The purpose of these projects is to assure that all contaminated streams are directed to the treatment plant. A substantial portion of this work will be completed in 1970 wich the remainder in 1971.

7. MISCELLANEOUS SMALL PROJECTS:

Included in these projects are the replacement of degassing tank piping at the existing clarifier and the provision of a secondary source of air for the aeration tanks. The purpose of these projects is to provide additional backup support systems to assure continued high performance of the treatment plant in the event of equipment malfunction. The degassing tank piping has already been replaced. We expect the secondary source of air to be completed by July 1970.

8. CONTROL OF ACCIDENTAL SPILLS:

This project provides for additional catchment areas, diked areas, or relief vessels to reduce the possibility of escape of accidental spills. Engineering design work is started and we expect a substantial part of this work to be completed in 1970.

9. DIVERSION FROM THE LAKE - ADVANCED TREATMENT:

The North Shore Sanitary District (NSSD) has put into effect a formal plan of action for which financing is being arranged. A bond issue has been passed, necessary land is being secured and engineering work is proceeding. Under the established NSSD timetable the District will completely divert its treated effluents to the Des Plaines River in 1972. Abbott is cooperating with the NSSD in a program to evaluate the feasibility and costs of integrating the District's new treatment facilities with Abbott's system. Abbott is, however, continuing to evaluate other advanced treatment process in the event of major obstacles or delays in the implementation of the pending NSSD plan.

In addition to the program of capital improvements and developmental studies other operational improvements have been instituted, including:

1. No new product or major process revision will be approved by management until the impact on treatment operations has been fully identified and evaluated.

2. The Director of Corporate Environmental Control will review and attest to the adequacy of treatment operations proposed for new facilities or major revisions or expansions before approval is given to proceed.

3. Environmental pollution control will be a factor in performance evaluations at all levels for those personnel engaged in treatment operations or in production operations generating wastes.

We will be reporting our progress on these targeted program completion dates to you on a regular basis. Plans and specifications will be submitted for your review and approval as they become available.

Sincerely yours,

David Schwarz

David Schwarz, Director
Corporate Environmental Control

Approved by,

RC Barnes

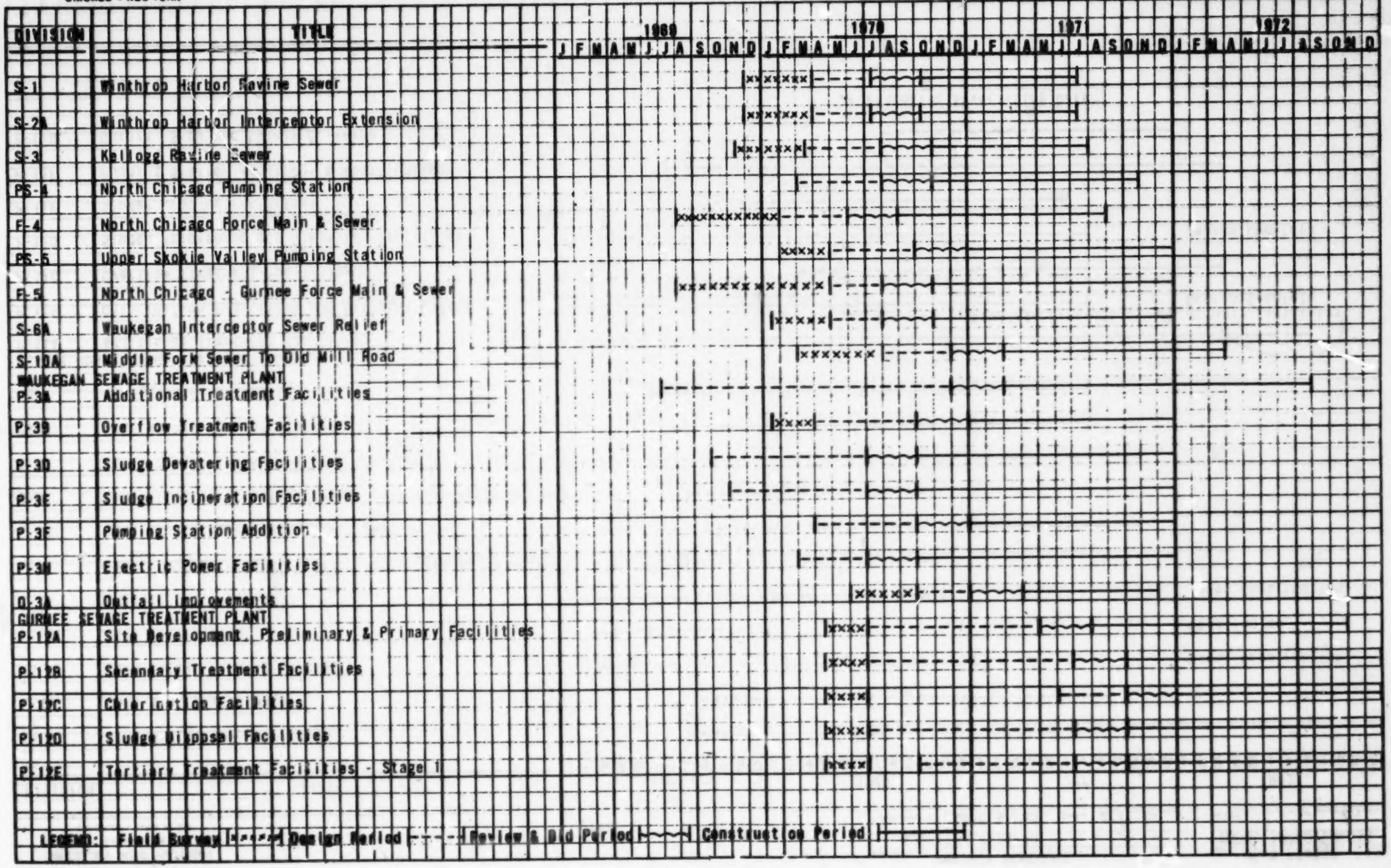
R. C. Barnes, Vice President
Corporate Engineering

DS/bj
3/12/70

GREELEY AND HANSEN
ENGINEERS
CHICAGO - NEW YORK

SUBJECT PROJECT SCHEDULE
ADOPTED 2/28/70
COMPUTED BY MDRR & PAK DATE 2/27/70

JOB NSSD SEWAGE WORKS IMPROVEMENTS
SHEET 2 OF 2



DIVISION	TITLE
S-1	Winthrop Harbor Ravine Sewer
S-2A	Winthrop Harbor Interceptor Extension
S-3	Kellogg Ravine Sewer
PS-4	North Chicago Pumping Station
F-4	North Chicago Force Main & Sewer
PS-5	Upper Skokie Valley Pumping Station
F-5	North Chicago - Gurnee Force Main & Sewer
S-6A	Waukegan Interceptor Sewer Relief
S-10A	Middle Fork Sewer To Old Mill Road
WAUKEGAN SEWAGE TREATMENT PLANT	
P-3A	Additional Treatment Facilities
P-3B	Overflow Treatment Facilities
P-3D	Sludge Dewatering Facilities
P-3E	Sludge Incineration Facilities
P-3F	Pumping Station Addition
P-3H	Electric Power Facilities
O-3A	Outfall Improvements
GURNEE SEWAGE TREATMENT PLANT	
P-12A	Site Development, Preliminary & Primary Facilities
P-12B	Secondary Treatment Facilities
P-12C	Chlorination Facilities
P-12D	Sludge Disposal Facilities
P-12E	Tertiary Treatment Facilities - Stage 1

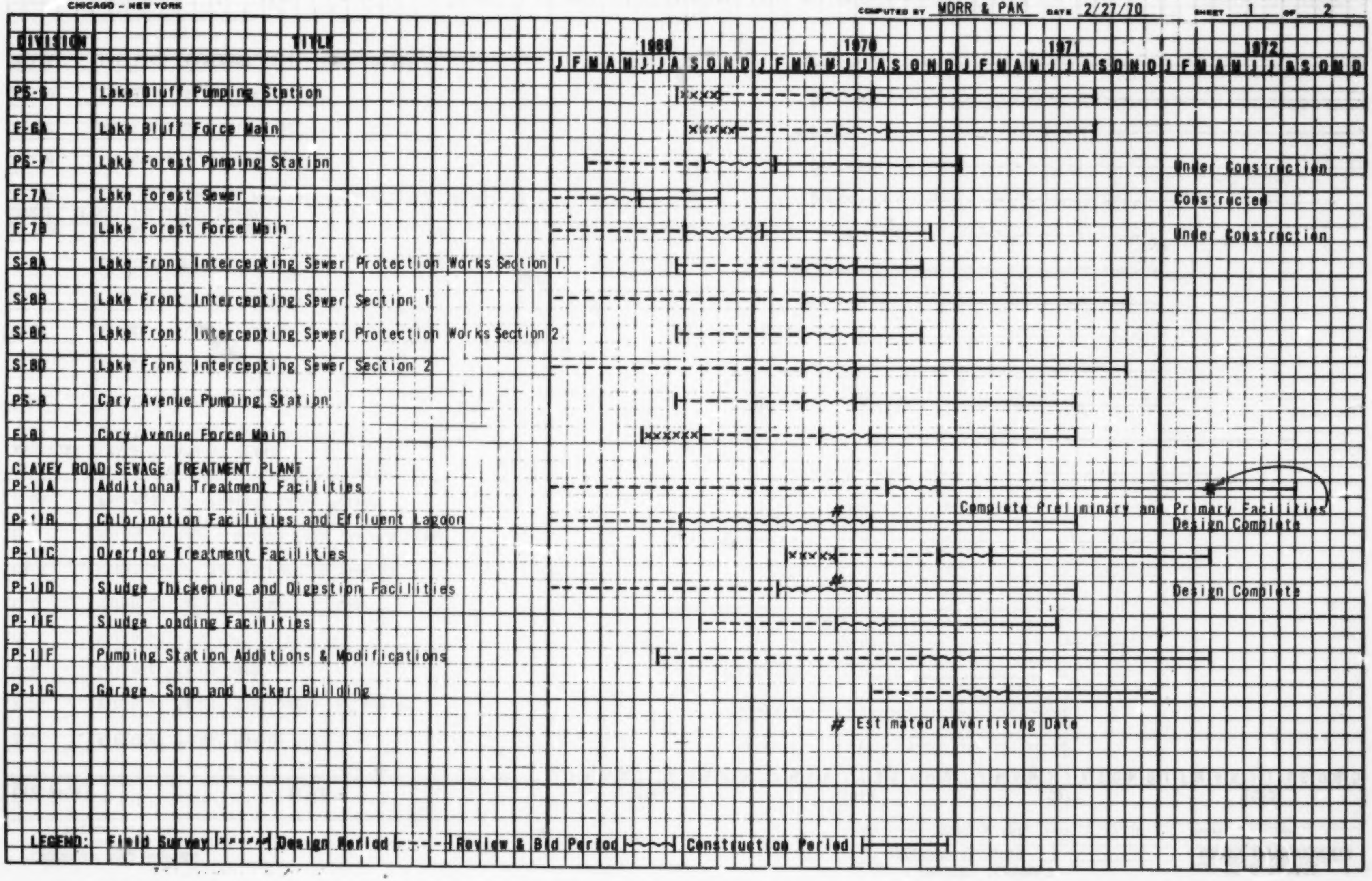
1969
1970
1971
1972
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D

LEGEND: Field Survey |xxxx| Design Period |----| Review & Bid Period |~~~| Construction Period |——|

GREELEY AND HANSEN
ENGINEERS
CHICAGO - NEW YORK

SUBJECT PROJECT SCHEDULE
ADOPTED 2/28/70
COMPUTED BY MDRR & PAK DATE 2/27/70

JOB NSSD SEWAGE 344
WORKS IMPROVEMENTS
SHEET 1 OF 2



MR. STEIN: Thank you for a very excellent and comprehensive report.

What I would like to indicate--what I did to the other States and conferees--this little check list that I have been given to check whether engineers have been retained, submit preliminary engineering reports, and so forth. I think that your information can be readily made available to fit that format, and if we have to put in additional personnel to get this, we will do this. The prior indication is that at headquarters in the Interior Department they would like to see this developed for all sources on Lake Michigan, and I am sure with the state of the information we have here this should prove to be no difficulty with yours.

MR. KLASSEN: Thank you.

MR. STEIN: Don't go off because I do think that we are very close together, but there may be some points to discuss. I think Mr. Klassen achieves this wonderful program by putting control in the manner he does, and I wonder if the conferees have any questions or comments?

MR. FRANGOS: I have several, Mr. Chairman.

MR. STEIN: Yes.

MR. FRANGOS: Mr. Klassen, I know you have provided this previously, but I don't have all the materials on it. I am wondering if you could just answer a few questions.

I just did a quick check, but I gather that there are 10 sources of pollution in the basin, is that correct, 10 or 11?

MR. KLASSEN: Sources?

MR. FRANGOS: Yes, discharges that are readily identifiable as polluters.

MR. KLASSEN: Yes, plus or minus a few.

MR. FRANGOS: O. K.

MR. KLASSEN: Ten sources, yes.

MR. FRANGOS: And what percentage of the drainage basin is in Illinois, about 1 percent?

MR. KLASSEN: In other words, of the Great Lakes drainage basin? An infinitesimal amount.

MR. FRANGOS: One other question that I have got in terms of the North Shore Sanitary District. What is the discharge in terms of volume?

MR. KLASSEN: About 20 MGD. Their manager is here.

Mr. Anderson, is that about right?

MR. ANDERSON: Yes, sir.

MR. FRANGOS: That I think is close enough.

MR. KLASSEN: About 1/10 of the Jones Island plant. (Laughter.)

MR. FRANGOS: Right.

MR. KLASSEN: To put it in the proper perspective here.

MR. STEIN: Let me interrupt for the people of the audience in case you are looking at the map. A good portion of this Chicago drainage does not go into the lake but goes the other way down to the Sanitary and Ship Canal to the Des Plaines River and into the Illinois River and joins the Mississippi River drainage system, so it does not drain into the lake.

MR. KLASSEN: Correct. We are in a very fortunate geographical position, I would say.

MR. FRANGOS: I would agree.

MR. KLASSEN: And taken advantage of. (Laughter.)

MR. FRANGOS: Yes, I would also agree.

A couple of other questions, because sometimes in some of these local Chicago area situations we kind of feel a little bit left out, too, in terms of the discussions.

But on this question of your standards as they relate to Abbott Laboratories, you talk about--and correct me if I am wrong--but this 80 percent BOD removal and then you combine it with cooling waters or whatever, a relatively pure stream, and then you set a concentration limit. But you do not establish, I gather, a pound loading when you set your requirement.

And I guess my question is, is there anything that would prohibit Abbott Laboratory, for example, doubling its production and yet providing 80 percent treatment and also providing dilution used in the better sense of the word, getting out into the lake?

MR. KLASSEN: Very definitely there is. First of all, the so-called dilution you refer to is another waste stream. The water that they use for cooling does receive some wastes.

Now, the overriding thing to remember is that there are water quality standards that are set in the lake and these are the overriding standards, not the effluent requirements, because I could stand to be corrected, but I don't believe under the Federal Water Quality Act there is authority to set effluent standards. I would say that looking back this is probably something that we all should have anticipated and I would hope that sometime in the future we could officially, the States and the Federal Government, adopt water quality effluent standards.

But we have no evidence, this is the overriding thing, that Abbott Laboratories is in violation of the water quality standards in SWB-7 that we set and the Federal Government approved.

Now, the effluent standards we are talking about were guidelines that were set up by the States to indicate to a potential polluter what they had to meet, in our opinion, in order to meet the water quality standards in the lake. This is something sometimes that is overlooked.

MR. STEIN: Yes. You know, and let me just interrupt here for a point of information, the President in his legislative proposals on water pollution control has asked for authority to establish effluent standards with the States.

MR. KLASSEN: In retrospect, I think this is something that should have been done previously.

MR. FRANGOS: Well, I still have a question. There still is no limitation on the total poundage that could be discharged as long as it met the water quality standards and your effluent criteria?

MR. KLASSEN: That is correct for Abbott or any other discharge in any other State.

MR. FRANGOS: Yes. Well, again in terms of equity I think you might be interested to know that on our some dozen paper mills that we have done this so that we have to meet our water quality standards--

MR. KLASSEN: We have--

MR. FRANGOS: --or we have standards implications of setting maximums as it reflects to production.

MR. KLASSEN: I would say tha. BOD reduction in terms of percentage doesn't mean too much. We advocate the same thing you are talking about, Mr. Frangos. We have done this on the Illinois River, set poundage.

MR. STEIN: Now that you have pushed this so far, you have raised the question that I was going to reserve for later, but I think it will save time since you have laid the groundwork.

You asked for a modification applicable to all industrial discharges within the Lake Michigan Basin. I think if we have taken the position or take the cue of your discussion here, we may be able to resolve that if we can arrive at a pound-per-day discharge so we won't get into this question of, quote, dilution, stop quote, of the wastes if we are talking on pounds per day in evaluating one discharge against another.

MR. KLASSEN: That is right. This is my principal purpose for raising this question.

MR. STEIN I think that may be something we should explore because this would provide an equitable basis for comparison among the various States of all the discharges in the basin.

MR. KLASSEN: We have completed--

MR. STEIN: Right. You recall we are going to arrive at that on the phosphates. Even though we talked in terms of 80 percent, we allocated that on a State basis and we are going to have a computation and come up with a pound per day figure.

I think this is the way pollution control is going and I think you have raised a very good point with this.

MR. KLASSEN: Admittedly we are in a rather unique position in Illinois in the process of removing all the wastes from Lake Michigan, and I don't know that I should be the one to raise this. However, we are always going to be confronted with problems of potential polluters of Lake Michigan regardless of the State, and I believe it is time, based on our past experience, maybe to reevaluate and to set and change some of the water quality standards in Lake Michigan and work into some of these new techniques that you are talking about. I would hope this would come about.

MR. STEIN: Yes, Mr. Frangos?

MR. FRANGOS: Yes, several more, Mr. Chairman.

A little clarification on this U. S. Steel Works, the Waukegan Works. I note that this is--

MR. STEIN: I wonder if I could suggest for the purposes of the record here, I think this would facilitate matters if someone looked back and read it --I know you have several questions and maybe some of the conferees--

if we could go through these one at a time and have all the questions and discussions on Abbott Laboratories and then we will go on to the next.

MR. FRANGOS: All right.

MR. STEIN: Does anyone else have a question or comment on the Abbott situation?

I have one for clarification. Where you say that all the wastes will be diverted to the Illinois River watershed from Abbott, does that mean that the cooling water will also be diverted or will the cooling water continue to go back into the lake?

MR. KLASSEN: They are in the process now, and I purposely didn't detail all of this, but in the appendix there is a detailed description of what Abbott is proposing and has in progress.

It is proposed that all wastes will be removed from this cooling water stream, and I don't anticipate that straight cooling water that might have anything else except heat in it will be diverted to another watershed.

If Mr. Anderson or his engineers are here, isn't that your understanding? You don't propose to take straight cooling water, is that it?

MR. ANDERSON: That is correct.

MR. KLASSEN: O. K.

MR. STEIN: O. K. I understand this.

Now, there is no proposal that any cooling within the plant be done to the seeping water going back to the lake? In other words, you are just going to take it in, use it for cooling water and put it out without reducing by artificial means the temperature?

MR. KLASSEN: Unless the reduction of temperature is necessary to meet the temperature water quality standards that we and the rest of the States adopt and which I understand is up for modification.

Let me say this, that the discharges from cooling water of any industry will have to be modified to meet the water quality standards that are established, and if the cooling water from Abbott eventually when discharged to the lake violates these, then artificial means will have to be used. But it, of course, is not anywhere in the capacity range or the temperature range of powerplants, for example. But this is what would be expected of them as we would expect of every other industry.

MR. STEIN: If there are no more comments, let's go on to the Waukegan Works.

Mr. Frangos.

MR. FRANGOS: Yes. I note that the 30,000 gallons of waste acid are disposed in Indiana by deep well injection.

MR. KLASSEN: That is correct.

MR. FRANGOS: I will just comment, of course, this represents some kind of a trade-off and I think it ought to be clarified that deep well injection is prohibited in Wisconsin.

MR. KLASSEN: Well, we don't permit it in Illinois either. (Laughter.)

MR. FRANGOS: Well, I hope you can develop a stimulation to your neighbor.

MR. STEIN: Just a moment. Mr. Poole?

MR. POOLE: What about J and L Steel Mill?

MR. KLASSEN: We do not permit deep well injection between Lake Michigan and the Fox River, between the Wisconsin line and Joliet, which is the northwest segment of the Chicago area. Because for long-range thinking there is water there, approximately 5,000 parts per million of chlorides, which is now not potable, but which in the future when desalination becomes practical we are holding this now unpotable water free from any further pollution so that it could be used in the future when desalination becomes practical. In other parts of the State we have two other deep well injections, one at Hennepin, Illinois, where the J and L Steel Mills put all of their pickle liquor, and in southern Illinois near the oil fields, where some salt water is included. And none of these involve any underground aquifers.

We have recently rejected two other deep well installations. We do permit these only under extreme conditions of geology where there is no ground water involved. The one at Hennepin is a little over a mile deep and it is not involved in any underground aquifers either now or potential.

So Mr. Poole is correct, we do have one, but inasmuch as apparently U. S. Steel chose to haul it to their Indiana plant, I would say we didn't encourage this, neither did we object to it being in interstate traffic.

MR. STEIN: Well, you know, if I were Illinois and I had a compliant neighbor like Indiana, I am not sure that I would be so sanctimonious, because they might get religion and then where will you put the pickle liquor?

MR. KLASSEN: We will take that chance. (Laughter.)

MR. STEIN: Do you want to say anything, Mr. Poole?

MR. POOLE: No. (Laughter.)

MR. STEIN: He left himself wide open. I can stir this up.

MR. KLASSEN: I was quite surprised at my friend, Mr. Poole.

MR. POOLE: Other than what I told the commissioner or the Assistant Secretary and that is, I don't believe there will be much problem in taking sulfuric acid out when you start taking out 5,000 parts per million salt.

MR. KLASSEN: Mr. Frangos, off the record.

(Off the record.)

MR. STEIN: Let's go back on the record.

Anyone on Commonwealth Edison?

MR. MAYO: Yes, I have an observation to make, Mr. Chairman.

Mr. Klassen has mentioned that the heat being returned to the lake is apparently dissipated within 600 feet of the outfall. I don't want to argue the point with him. But I think that we should refer this item to figure 8 in the November 1968 report of the Conference Committee on Radiological and Thermal Waste Discharges because that figure would indicate that at 600 feet from the discharge, at least in April of 1968, that there was a temperature rise of approximately 7 degrees and as far out as 2,800 feet from the discharge there was still a temperature rise of approximately 2 degrees at a foot below the surface.

MR. KLASSEN: That is correct. The word "apparently" was purposely put in there because under normal conditions it is dissipated within 600 feet. However, I could go you one a little better on your distances. There is a tongue of warm water that goes out into the lake even farther than indicated in your report, even up to about 4,000 feet, on the surface it goes out, and they are under certain meterological conditions. And rather than going into all these details, we recognize this, this is part of the record, under normal conditions it is about 600 feet. But it is possible, and this concerns us on all of these, that the warm water could--we call it a tongue--it could be channeled out under certain conditions far out into the lake. We recognize this and I am glad you brought this up.

MR. STEIN: May I make a comment on this, and I ask all the conferees to listen to this because we are going to be grappling with this temperature business pretty soon and I have had a pretty concentrated dose of it in the last few months myself.

I think what Mr. Klassen and Mr. Mayo have said is something we are finding all over. When we talk in terms of the 600 feet, 1,200 feet, 4,000 feet, this varies from time to time and we can argue with that back and forth. I would refer back to the type of effluent control that Mr. Klassen mentioned awhile ago. This might be best for the industry and for us, even though you had to raise your temperature that you were looking at a degree or two, but the place that you might want to measure this is in the pipe where it comes from the plant. Therefore, the plant would know what they are doing; the regulatory agencies would know what they are doing; and we would recognize when we set that temperature it would protect the water uses of the receiving stream, but we would also know that from day to day there would be fluctuations of a tongue or something of that kind and we wouldn't get into these involved measurements or discussions. Because where the discussions may just take time, it costs a lot of money to go out and measure the tongue or all these flanges or where the temperature is going to, and if that doesn't serve any useful purpose we might be well advised to think in terms of putting that control right in the pipe.

By the way, we have proposed that in that Florida case, that we measure this right at the outfall and not in the water pool.

MR. KLASSEN: And I understand, Mr. Chairman, that this could very well be the subject of a technical session in the very near future and I hope that this will take place.

MR. STEIN: Right.

May I have one more question for clarification. Does the Commonwealth Edison Company provide any cooling devices at the present time?

MR. KLASSEN: Not in that plant, no.

MR. STEIN: Thank you, sir.

MR. KLASSEN: They have another plant on the Illinois River where they have under construction a 1,200 acre lake in lieu of cooling towers.

MR. STEIN: Right.

MR. KLASSEN: We know it can be done.

MR. STEIN: Can we go now to Fanstgel, Outboard, Chicago Hardware and Foundry, Johns Manville. There are no questions on that?

Here we go. U. S. Steel South Works. Any comments or questions by the conferees?

Mr. Frangos.

MR. FRANGOS: Yes, clarification. What were the terms of the temporary injunction, Mr. Klassen?

MR. KLASSEN: That there would be no discharge to Lake Michigan.

MR. STEIN: None at all?

MR. FRANGOS: Immediately cease?

MR. KLASSEN: Immediately, of oil.

MR. STEIN: Of oil?

MR. KLASSEN: Of oil.

MR. STEIN: I was going to bring that up. The point is, the way this reads, that the lawsuit was filed by the Sanitary District of Greater Chicago in the District Court of Cook County. A temporary injunction has been obtained and the District is seeking a permanent injunction.

As I understand this, Mr. Klassen, this does not stop the discharge of wastes except the discharge of oil from the U. S. Steel plant.

MR. KLASSEN: That is my understanding of this case.

MR. STEIN: And they brought the injunction on the fact--how many gallons of oil were out, about 10?

MR. KLASSEN: According to the testimony, and this is part of the decision, between 2 and 6 gallons of oil were discharged to the lake.

MR. STEIN: Well, again we have to look at this. When we talk about what the temporary injunction has achieved, this is caused by a discharge of 2 to 6 gallons of oil. It is indicated that they are not to put out any oil. U. S. Steel, as far as I know, under the State and the conference requirements had stopped its oil discharge except for the time that they have had this between 2-and 6-gallon slippage?

MR. KLASSEN: That is correct.

MR. STEIN: And that is the basis that they got this temporary injunction on and they are moving to seek a permanent injunction for this violation?

MR. KLASSEN: That is correct. There is another case been filed against the U. S. Steel for the court to enjoin them from any discharge, either to the lake or the Calumet River, no discharge And this has not been heard.

MR. STEIN: Mr. Frangos.

MR. FRANGOS: Well, does your last sentence indicate, though, that irrespective of these lawsuits, which stops 6 gallons of oil getting in, that they are still proceeding and whatever the outcome of the legal proceedings that you would anticipate that they will fully comply with the conference requirements by December 31, 1970?

MR. KLASSEN: That is correct. I do want to say this for U. S. Steel Corporation. They presumably could have taken advantage of all of the litigation, I think there are seven lawsuits filed against them, including the latest one for a fine and a potential imprisonment of the plant manager, but they have proceeded and are proceeding on schedule and will be in compliance with the completion of their recycling of their wastes and their program by December 31, 1970.

MR. STEIN: Well, I think this is the key point of the lawsuits that you have brought up. The only reason I say this, and check me if I am wrong on this, you have talked about the requests for the lawsuit. As far as I understand it, we have these schedules established for compliance by United States Steel. Presumably U. S. Steel is going to move forward with this.

The question here is, are they going to clean up any faster because of the lawsuits? Maybe the judgment is they are not. If they are not and we have this date, what is the purpose of the lawsuit?

The second thing is that I think when we talk about the Federal position on these lawsuits we have to recognize, as Mr. Klassen has stated, that the State filed the suit in the State court, and the question here is whether the Federal Government joins with a State in a suit in the State court. This is a fundamental question that doesn't necessarily deal with water pollution control alone.

If we are dealing with the primary rights and responsibilities of the States and the States file a suit in the State court, the judgment is, as far as I know, that we encourage the State in this activity, provide any assistance we can, but generally speaking the Federal Government will engage in a suit only where the Federal interest is involved. And it is rare indeed, gentlemen, to get the Federal Government to join in any suit.

In my experience, as Mr. Klassen and Mr. Poole know we have been working on this since 1948, the only suit that I have ever gotten the Federal Government to join in that we didn't start was that Ohio Valley suit, ex rel. Dyer against Simms, and that is because an interstate compact was involved and that was a suit before the Supreme Court of the United States. And to get permission to join that suit we had to get permission from the Attorney General himself. So this has been my only experience in all these years.

What I am trying to say, if there is a change this will be a change in policy, because that has been a steadfast governmental policy of not joining suits in State courts or in lower courts and not just related to pollution control.

MR. KLASSEN: That is correct. And my next statement I certainly don't mean it like it might sound, but I do believe that the end result of pollution abatement will be accomplished just as fast without the intervening of the Federal Government. State can do it alone and if we get into the question of legal jurisdiction and if this is going to involve any delays, then I would say the Federal Government would be doing water pollution a favor by staying out of it because it is just one more court to complicate the procedures. And I have said publicly that pollution problems are going to be solved not in the courts, because from our experience in the courts this is a way to very often delay.

The solutions are going to be solved by the technical people. There are a lot of people don't agree with this, but by and large the technical people are going to have to solve this, but with the persuasion of the public itself and, if necessary, with a little persuasion by the courts.

MR. STEIN: I think I--

MR. KLASSEN: And as you have said very often, Mr. Chairman, the Calumet area conference is probably the best example of this in the United States.

MR. STEIN: By the way, I think I thoroughly agree with that, Mr. Klassen. Any request for any action, and I don't care whether this is a conference, a hearing, court action, 180-day action, State action or anything, the way I look at this is what action can we take to get the pollution cleaned up in the most rapid manner. And sometimes court action is required, but very, very seldom, it seems to me, to move the pollution cleanup forward.

We have set for the Calumet conference compliance dates, and we have pared them down considerably. I have seen nothing yet, no other action yet, that has improved on what the conferees were able to get out of the industry in setting up a schedule.

MR. KLASSEN: I think one of the high points of this session, Mr. Chairman, is that you and I apparently agree on most things.

MR. STEIN: Right. Thank you.

Maybe we are both getting old.

MR. KLASSEN: Speak for yourself. (Laughter.)

MR. STEIN: Wait. They may have some more questions.

MR. KLASSEN: Oh, I am sorry.

MR. PURDY: Mr. Klassen, on the continuous disinfection, I am not acquainted with the basin, this is worded so that all effluents discharged to Lake Michigan have disinfection, have been disinfected since May of 1968. Are there others in the basin or does this represent everything within the Lake Michigan Basin?

MR. KLASSEN: This represents everything within the Lake Michigan Basin. We are unfortunately or fortunately not in the position like Michigan is where we have a lot of streams tributary to the lake on which there is need for increased treatment.

MR. STEIN: All right. Now, let's go down that page. Does anyone have any other comment?

There is just one I have for you, Mr. Klassen, on the combined sewers -- the question of prohibiting all storm sewers to the lake, when you asked if it is a Federal policy to be put to all the States. As I understand the situation, this was an ordinance adopted by the Metropolitan Sanitary District of Greater Chicago. This was a local ordinance, not a Federal requirement.

What they did was, they asked our people if they thought it is a good idea, and I guess anyone who comes up with an idea of keeping anything out of the lake will get the approval of our people. But this wasn't a Federal requirement.

MR. KLASSEN: Not a Federal requirement--

MR. STEIN: It was local initiative.

MR. KLASSEN: --but a Federal endorsement of a local requirement and I have got the correspondence here.

MR. STEIN: That is right. But the question again I ask, Mr. Klassen--and you have asked a legitimate one--any time you have a local requirement, which may go over and beyond the general requirement we have, and the Federal Government endorses that, does that mean that we then have adopted that and ask everyone else to adhere to that requirement? This is the question that was raised.

MR. KLASSEN: That is correct, but let me ask you. Has this same letter been sent to any of the other States?

MR. STEIN: To the best of my knowledge and belief it has not. But if any other State or any other city proposed an ordinance like this I suspect they would get the same letter.

MR. KLASSEN: O. K. We will consider it a compliment then, Mr. Chairman.

MR. STEIN: Now 8. Are there any other comments?

MR. PURDY: On 11 I have one.

MR. STEIN: Yes.

MR. PURDY: Mr. Klassen, on the matter of dumping of polluted materials into Lake Michigan, does your policy include the Corps of Engineers?

MR. KLASSEN: Yes.

MR. PURDY: Or are they excluded from it?

MR. KLASSEN: The Corps of Engineers is included in our policy. This has raised a rather moot question, and I am speaking now unofficially. It is my understanding that the Corps does not feel--if anybody is here from the Corps they can correct me--the Corps does not feel that they are under the jurisdiction of the State of Illinois. We feel that they are and the issue has not been raised because the Corps has not made any application to the State of Illinois for any permit for dumping nor has it, to our knowledge, dumped any material in the State of Illinois.

MR. PURDY: Well, then, does that mean that the polluted material reported by the Corps yesterday from the Waukegan inner harbor in 1969 was dumped in somebody else's waters? (Laughter.)

MR. KLASSEN: It could have been, because the area in Lake Michigan that Congress has authorized for dumping is partially in Illinois and partially in another State, and it is my understanding that dumping may have occurred in another State but it did not occur in Illinois. If it did, it was done without our knowledge and illegally.

MR. POOLE: It would have been a longer haul, Mr. Purdy, if they had dumped it in the other State, because there is about a mile at the south end of authorized dumping area that is in Indiana. The rest is in Illinois. Maybe they hauled it down to Indiana, I don't know.

MR. KLASSEN: This seems to be the practice in Illinois.

MR. PURDY: There may have been some dumping without a permit issued, is this possible?

MR. KLASSEN: Oh, it is always possible that they would sneak some material out there and dump it without anybody's knowledge, but if it was it was strictly illegal.

MR. STEIN: Since this--

MR. KLASSEN: I am not accusing the Corps of Engineers of doing this, because they probably took it to Indiana. (Laughter.)

MR. STEIN: I have never seen the Corps move any farther than they had to. (Laughter.)

Since this comes up, let me give you my opinion on this. My opinion is that the Corps is not subject to State control and we have maintained that as a Government representative over and over again. I think I talked about this earlier when we were in the Public Health Service where we had doctors and some of the States wanted us to be operating under State license.

The Corps, as other Governmental agencies, Federal agencies, operates on a governmental function. As far as I can see, the Corps' function is particularly sensitive. That is under the war powers of the Constitution. And if you want my opinion, it would be unconstitutional for the Congress or anyone else to delegate any of the war powers to the State or any State, for a State to have the veto over that, and I don't know that anyone has suggested it.

Now, the Corps may, as a matter of grace, agree to take up one of these permits. As a matter of fact, you recall when we first convened this conference the official conferee was the State of Illinois. As a matter of grace, you decided to let the Sanitary District come in with you. But that wasn't the law.

And in the same way, I think, this applies to the Corps. The Corps or any other Federal agency in the operation of its governmental function is not under the jurisdiction of the State agency.

MR. KLASSEN: For purpose of information, are there other congressional authorized dumping areas in Lake Michigan in Wisconsin waters or Michigan waters?

I don't know. I am under the impression there is. Does anyone know?

MR. PURDY: Yes.

MR. KLASSEN: In Michigan?

MR. PURDY: Yes.

MR. KLASSEN: Maybe they took the Waukegan material to Michigan, then. I stand corrected, Mr. Poole, if I made an unfair reflection on Indiana. (Laughter.)

MR. STEIN: Are there any other comments?

MR. KLASSEN: Thank you for your indulgence.

MR. STEIN: Thank you. And by the way, I want to say this, that is a really excellent report. And I think the report reflects the highest form of progress in meeting a very difficult problem and meeting the time schedule. I think perhaps, as Mr. Klassen indicated, because of the nature of the situation here, geography is on his side and he has a relatively small area to concentrate on, but I think if we had all reports like this we would be on our way to cleaning up Lake Michigan.

Thank you very much.

MR. KLASSEN: Thank you.

MR. STEIN: We are going to try to push on through with this and we have two more States to hear from, but we will take a recess now for 10 minutes.

(RECESS)

MR. STEIN: Let's reconvene, please.

We will call on Mr. Klassen to continue with the Illinois reports.

Mr. Klassen.

MR. KLASSEN: Mr. Chairman, so far as I know, we have four presentations, maybe five. I am going to call on Mrs. Lee Botts, the Open Lands Project, first. She was here yesterday and waited over. And I have her presentation here, which I think raises some real good points for this conference.

Mrs. Botts.

MRS. LEE BOTTS
OPEN LANDS PROJECT
CHICAGO, ILLINOIS

MRS. BOTTS: I am Mrs. Lee Botts representing the Open Lands Project, a private, nonprofit conservation organization headquartered in Chicago. My organization serves as a clearing house and information center on Lake Michigan for citizen groups in the four States of Wisconsin, Illinois, Indiana and Michigan.

On Monday I attended a hearing at Grand Rapids, Michigan, called by the Subcommittee on Energy and Natural Resource of the Senate Commerce Committee, chaired by Senator Philip Hart. What I heard here yesterday in this conference has underscored what was brought out in the Grand Rapids hearing and the plea made recently by the President of my organization to the Illinois legislative commission on the use of Lake Michigan and its adjoining shoreline.

The participants in the Grand Rapids hearing included citizens who have already suffered property loss owing to construction of a nuclear powerplant on Lake Michigan and other citizens who stated why they fear that operation of such facilities may threaten their own existence and that of the lake rather than only their land. They were not reassured in Grand Rapids and they have not been reassured here that industry and government shares their concern.

There was testimony by biologists, by a staff member of the State water regulatory agency and by representatives of the utility industry. The inescapable conclusion that resulted was that no one, neither the citizens, the researchers nor the power companies, now has sufficient knowledge to offer reassurance to anyone that the seven nuclear plants and ten reactors scheduled to be operating on the lake within a few years will be worth the environmental consequences.

Yet what has been said here confirms that the nuclear powerplants under construction on the shore of Lake Michigan are apparently going to be allowed to go into operation before the full consequences have been evaluated and without the public's having had sufficient opportunity to participate in the decision of whether the electricity to be generated is worth the possible cost in clean air and clean water and the certain loss of recreational and esthetic resource.

To give you one example, yesterday morning John Carr of the Bureau of Commercial Fisheries called for location and documentation of the discrete spawning areas of the fish now in the lake before the nuclear plants go into operation. He directly contradicted a statement made by Mr. Fetterolf in Grand Rapids when he challenged what he called the misconception that discontinuance of discharge of heated effluents would result in reestablishment of previous species. Representing the Michigan Department of Natural Resources, Mr. Fetterolf said on Monday that he saw no reason not to go ahead and permit the discharge of water heated 20 degrees in the volumes of millions of gallons per second. He was certain, he said, the power companies would cooperate and the discharge could simply be stopped if there was any reason to do so.

I do not believe, nor do I think the power companies believe, that once they begin operating the plants they are now completing at costs ranging up to hundreds of millions of dollars per site it will be a simple matter to cause them to stop use of the lake whose convenience was the reason for choice of locations on its shores in the first place.

To use another example of unresolved questions that get different answers from different sources was that raised by the spokesman for the Wisconsin Electric Power Company yesterday. He stated that at his company's

Two Rivers plant the heated effluent would be discharged on the surface of the lake near the shore when it could receive maximum exposure to the atmosphere with the most rapid dispersal of the heat from the water.

Yet at Illinois on the same side of the lake at another plant designed by the same engineering company at Zion, Illinois, the discharge will be hundreds of feet out in the lake well below the surface. This approach is defended on the grounds that it will prevent formation of a heated plume on the surface that would interfere with oxygenation of water below it. I cannot rationalize the contradictions in these theories, but until someone can in a way that offers protection to the lake, I do not believe either kind of discharge should be permitted.

In yet another case, the Atomic Energy Commission has required the Indiana and Michigan Power Company to redesign its intake and discharge system at Bridgman, Michigan, possibly for still other reasons. In this location on the east side of the lake the winter ice cover that builds up protects the shore from erosion and the wave action generated by winter storms. The Wisconsin company spokesman yesterday cited melting of the ice cover by the heated water as an advantage, yet at Bridgman the same effect is greatly feared.

What I am trying to say is that the question of nuclear powerplants and protection of Lake Michigan is far more complex than anyone realized it could be just a few years ago. The power company may feel that what it said four years ago is applicable today, but the public does not agree, and is growing ever more afraid. What the utility industry and government must recognize is that the public is so afraid and so uncertain whether environmental protection is shared as a goal to which economic gain must be subservient if necessary that it now questions the formerly sacred precept that our only choice is between doing without electricity or doing without nuclear powerplants.

I am sure you have all heard the statement that nuclear power is the most closely controlled technological development that has ever taken place. In a sense this is so, and yet as far as the public is concerned, the multiplicity of government agencies that share in authority over use of nuclear power to generate electricity makes it appear to be a most uncontrolled force against which there is no recourse.

I agree with Mr. Klassen that recourse to the courts sometimes delays progress. What I am afraid of is that this is where the public is going to go and it already has. There have already been suits filed against the powerplants around Lake Michigan unless government assumes the responsibility for providing us with the protection to which we are entitled.

Except for the Atomic Energy Commission, the only agency with enforcement authority over the whole lake from a single office is the Federal Water Pollution Control Administration.

I do not believe that the AEC's competence in building reactors proves their ability, nor their willingness, to protect the environment in operating them and certainly not on the basis of present knowledge about thermal effects.

This four-State conference is meeting in a cooperative effort to correct mistakes made in an ignorant and uncaring past. Mr. Stein questioned yesterday whether brownie points should be given to cities and institutions who claim credit for meeting outdated standards when they are months and years behind schedule in meeting current standards for water quality control.

What I said in Ann Arbor was that so far in this area the FWPCA has been a paper tiger and that I feared this conference would be yet another occasion for documenting the continued deterioration of the lake without aggressive action to prevent or avoid what may result from the advent of nuclear power around its shores.

I am asking you now what the FWPCA and the cooperating State agencies are going to do to avoid having to meet together five years hence to decide how to deal with problems they know right now may develop from this source.

As the President of my Board of Directors, Mr. Jeffrey Short, said to the Illinois legislative study commission on Lake Michigan, "We must go slow in use of nuclear power until we know how to prevent damage to the lake, to the air above it and to its shores." The city of Milwaukee may not have any excuse not to disinfect its sewage but neither does the FWPCA have any excuse not to avoid thermal pollution of Lake Michigan.

The real choice is not whether to do without electricity, but whether to pay now to prevent damage in its generation or to pay later to correct it.

I would like to take this opportunity to say that the Open Lands Project has invited the conservation groups in the four States around the lake to meet together with us to consider how to protect the lake in production of electric power. Mr. Mayo has agreed to appear there and discuss the role of the FWPCA and I am hoping that we get a better answer than we have gotten so far yesterday and today.

Thank you.

MR. STEIN: All right. Why don't you wait there, since you directed so much against FWPCA. Maybe you are directing the question to the right one. I am here and I share your concern in the confusion that you indicate that you read in the paper, because recently I got part of an assignment that got me into this problem of thermal pollution and I went through the same kind of mental throes that you have gone through here getting all this contradictory information.

But one, when you ask what we are doing, we are moving now. We have what most papers have called the landmark case in Florida on a power company on a proposed nuclear plant and we are in court right now. The thing that makes me think that I am doing a good job sometimes is on one hand when I get called a paper tiger and then down south when we left Miami they were calling me such things as arrogant, when I believed I was so polite butter wouldn't melt in my mouth, and a commissar, So you take your choice. And my guess is as a public official, when you get both kinds of obloquys directed at you, you may think you are doing a good job.

But let me say, one, we have gotten together with the Ohio River States. We didn't talk about a 20-degree rise, we talked about a maximum of a 5-degree rise. Our proposals in Biscayne Bay were a 1-1/2 degree rise in the summer, which included October, and a 4-degree rise the most of the winter with a requirement for a discharge of no more than 90 degrees measured at the outfall, which is pretty, pretty tight.

The power industry is opposed to that. One of the real issues we have to deal with is trying to develop with the States here and the other lake States a rational policy on control of temperature in the Great Lakes region. This is not an easy task and this is one where you find the technicians are coming up with evolving concepts.

MRS. BOTTS: I am aware of that, but the power companies are not evolving, they are being built.

MR. STEIN: Wait a moment. However, we have moved in Florida for an injunction. We are not going to, as far as I am concerned, allow any company, and I don't want to relate this to power companies, any company to put out a heated effluent which is going to damage water quality. And that is why I think if you listened to the colloquy that Mr. Klassen and I had, this wasn't just related to power companies or to nuclear plants. We are dealing with fossil fuel plants too.

However, if we are going to come up with any rational explanation of this, I think, and I just put this here, you are going to, I hope, do what I think we are trying to do, paper tiger or no, is patiently listen to the welter of testimony and conflicting opinions and try to come out with a program that is going to safeguard our waters.

By the way, next week I am getting a full dose of this. I called my office this morning and on Tuesday I am going to be in Georgia, then on to Alabama and Mississippi to discuss these temperature criteria with them. And if you think you have got a problem here, when dealing with the southern streams where the waters are naturally that much warmer, we just don't have the leeway you have up here and we have to have some very, very rigid controls.

We are trying at the present time to work this out with the four States involved here for Lake Michigan and I think that we would welcome your views on this and your participation. But I also do think that in view of the relative newness of the project and the complicated nature of the situation that we are going to have to move forward carefully. I don't mean this is going to take a long time--

MRS. BOTTS: Well, I hope not because some of these power companies are supposed to operate this year.

MR. STEIN: Again, just because someone says they are going to operate or start operating doesn't give anyone the right to pollute, and we are going to look at that very, very carefully. And I stand with you, I get a little annoyed when the companies threaten a power shortage if we are going to make them do this, and I think this is the situation that we as citizens have to watch.

MRS. BOTTS: We will be, and we will be here at the next conference.

MR. STEIN: Are there any other comments or questions on this?

MR. PURDY: No question, Mr. Stein, but I do have a comment with respect to a statement made to decide how to deal with problems they know right now may develop. I think this is the perplexing problem in the whole area--that we do not know right now that problems will develop and, in fact, if such information would be available today, speaking now for my Commission, they would not be waiting five years hence to take any action; if they were certain that a problem would develop they would be taking action today. Again the perplexing problem that we are faced with, Mr. Fetterolf was here yesterday at the time that Mr. Carr made his statement. He disagrees with Mr. Carr's statement. You have differences of opinions now between biological experts. I don't think this difference is real important, though, because really if we have discrete spawning areas present that we should take action now to preserve those and it is most important to carry forth the studies recommended by Mr. Carr.

Again referring back to Mr. Fetterolf's statement to Senator Hart's Committee, I am sure that he did say that he was certain the power companies would cooperate. But again, cooperation or not, it is my Commission's position on this that necessary treatment facilities will be placed in operation at an early point in time with or without the cooperation of the companies. They will take action to require this.

With respect to the redesign of the Indiana and Michigan Power Company, this was not redesigned at the request of the Atomic Energy Commission. This was redesigned to recognize the problems that the people in the local area have brought to the attention of the State and to the power company and the fear of accelerated erosion during the winter periods when the protective ice shelf might be, say, melted by the hot water plume. So that this was done to make certain that this would not take place and it was not at the request of the Atomic Energy Commission.

MR. STEIN: Are there any other comments or questions?

I am sorry we are not taking any from the floor. If you want to come up we will call on people later, or arrange with the State, but we have to go along in an orderly way.

If not, Mr. Klassen.

MR. KLASSEN: Yes. Mr. Poston, Commissioner of the Department of Environmental Control of the city of Chicago, has a statement for the record here that he wants to present. And the justification for Mr. Poston's appearing here is this new department does have water pollution control particularly in the Chicago Harbor area and we are going to hear what Chicago is doing in this connection. He is not a newcomer to this conference, but here in a new capacity.

H. W. POSTON, COMMISSIONER
DEPARTMENT OF ENVIRONMENTAL CONTROL
CITY OF CHICAGO

MR. POSTON: Thank you, Mr. Klassen.

Mr. Chairman, ladies and gentlemen.

H. W. Poston

Chicago's greatest natural resource is Lake Michigan; no other city in the United States has a comparable lake front to that of Chicago. Control of pollution of Lake Michigan is of unending concern to Chicago and in the past we have in Chicago taken giant steps to protect this prized resource.

Out of a deep and continuing concern for the preservation of the total environment, the City Council of the city of Chicago, at the request of Mayor Richard J. Daley, created a Department of Environmental Control which has the responsibility, among other things, for the control of air, noise, and water pollution within the city of Chicago. This new department became effective on January 1 of this year and I was appointed Commissioner on February 1 of this year.

Members of the conference, while my office has changed, my objectives regarding the water pollution problems of Lake Michigan remain unchanged and complement the objectives of the conference members as set forth in the conclusions and recommendations of the conferees at the first session of the conference. I pledge my full support in your efforts to eliminate the existing pollution problems and to prevent the creation of additional pollution of Lake Michigan and its tributaries.

I do, however, as a result of my present office, have a more partisan interest in the cleanup of Lake Michigan and I am most anxious to see specific accomplishments with respect to the recommendations of the conferees and in accordance with the recommended timetables or target dates which you have set. In this regard, I urge the conference to recognize the urgency of the need for corrective action and to take appropriate steps within the framework of Section 10 of the Federal Water Pollution Control Act to accelerate the achievement of the objectives of the conference.

Chicago has an enviable record in its past efforts to prevent pollution of Lake Michigan. However, it is striving for an even better record in the future. At the present time we are coordinating a joint effort of all city agencies in an aggressive plan to prevent pollution of the lake by wastes from watercraft operating within the city of Chicago. Appropriate State and Federal agencies have been invited to participate in this effort. The enforcement program will be directed at all types of vessels and all types of wastes from heads to bilges.

I am happy to state that in the interest of securing cooperation from pleasure boaters, the Chicago Park District and the Department of Environmental Control will provide dockside pump-out facilities free of charge and on a 24-hour basis during this boating season. This activity should make a significant contribution toward compliance with Recommendation 13 regarding uniform rules and regulations for controlling the wastes from watercraft within the State of Illinois. And pending implementation of the new Federal Act, which I understand will take over in control and enforcement in the matter of boat pollution, I would say that Chicago has no intention of lessening its enforcement of the Chicago ordinance at this time.

A Beach Sampling Committee has been established to coordinate the sampling programs of the lake by the various city agencies and to establish a uniform technique for bacteriological analyses. The activities of this committee are designed to implement the recommendations of the conference's Monitoring Committee to secure compliance with Recommendation 17 regarding a coordinated four State-Federal monitoring program in Lake Michigan. And I will say that we look forward to an active program on the part of the Federal Government in monitoring of Lake Michigan.

The city is working toward compliance with Recommendation 6 regarding control of pollution from combined sewers and with perhaps the most expensive and difficult recommendation, Recommendation 7 regarding separating combined sewers, and this is done through a project known as the Chicago Underflow Plan. This project, which is in the planning stage, will prevent overflow of combined sewers and any reversal of flows of the Chicago River into Lake Michigan through the construction of a series of tunnels to serve as storage reservoirs for sewer overflows. The estimated cost for this project has been set at $650 million.

On the other side of the ledger, we in the city of Chicago are concerned over the continued presence of high bacterial counts as measured at the raw water intakes and various stations along the Illinois shoreline. Mr. James Vaughn, Engineer of Water Purification, will tell you more regarding this matter. The presence of these counts gives added emphasis to the need for an aggressive posture on the part of the conference to secure compliance by all with the recommendations of the conference.

Chicago looks to the Federal Government agencies to take an active role in the control of pollution from commercial vessels operating in Lake Michigan. It is our understanding that the newly passed Federal legislation gives the Federal Government responsibility for control of wastes from vessels of foreign and domestic registry. The conference should secure from the Federal Government its program for implementing its responsibility established by Recommendation 13.

In conclusion, I came here hopeful that the full report of this session would show compliance with Recommendation 4 requiring continuous disinfection for all municipal waste treatment plant effluents no later than May in 1969. I am disappointed to find that a number of exceptions to this have been made, and especially the city of Milwaukee.

I would also ask that the conference require submission on the part of the conferees the status of their plans for compliance with Recommendation 6 which is to be effective in December of 1970.

Gentlemen, you have my best wishes for a successful conference and I again extend my full cooperation and support for the achievement of the objectives of this conference. Thank you.

MR. STEIN: Thank you, Mr. Poston.

Any comments or questions?

I don't know if Mr. Frangos wants to say anything. Did you hear this, that he came here fully expecting compliance with continuous disinfection no later than May 1969? I guess we had no previous knowledge of this and you were caught by surprise.

MR. FRANGOS: Apparently so, unless there is some kind of a process that takes place when you wear a different hat that causes surprises and erases the memory, because one of the problems we have got here is the fact that this whole thing was communicated to the Regional district of the Federal Water Pollution Control Administration in several forms, verbally and otherwise, and there were a lot of surprised people here.

I don't have any other comments, Mr. Chairman.

MR. STEIN: Any other comments or statements? If not, thank you very much, Mr. Poston.

Mr. Klassen.

MR. KLASSEN: A short statement by Mrs. Ellen Johnson, who has been active on Lake Michigan and attended all these conferences.

She has a very short statement to put into the record.

Mrs. Johnson.

EILEEN L. JOHNSTON
WILMETTE, ILLINOIS

MRS. JOHNSTON: Thank you, Mr. Stein, and conferees.

Our conferee from Illinois did his best yesterday to make me angry enough to pack up and go home, but I was determined to give my little two cents worth today.

My name is Eileen L. Johnston, Mr. Klassen (laughter), and I live in Wilmette, Illinois. My short paper is entitled, "Are we going forward or backward in our fight for survival?" Some days I wonder. Does man really want to survive?

Mrs. E. L. Johnston

And Mr. Anderson, I think you are still back there, when I attended some of those public hearings of the North Shore Planning District before their planning board, I was convinced that most of the adults in the United States have decided they really don't want to survive.. They would rather have their three cars in the garage and their air conditioners, and so forth.

But I think probably the most wonderful thing about this meeting today are these three Boy Scouts here. I have been working with high school students and college students and I am convinced that that is our hope, is in the young people.

The recent three-quarter inch thick report on "Plankton Diatom Assembleges in Lake Michigan" by Stoemer and Yang of the Great Lakes Research Division of the University of Michigan should serve as a stop sign on adding any more phosphorus to the lake. The report shows clearly that the lake is degraded even more than we had realized. Phosphates nurture rapid growth of algae. We don't have to use so much fertilizer containing phosphates and nitrates. We don't have to use detergents with high phosphate content. I urge Secretary Hickel to set standards of biodegradability, toxicity, water eutrophication ability and health effects on all detergent ingredients as suggested by Senator Gaylord Nelson's bill. I also believe we should stop manufacturing of products with that ingredient by January 1, 1971. This will take research and development and I believe it should be done at the Federal level, for industry has lagged on this one also.

I am greatly concerned about the Metropolitan Sanitary District of Greater Chicago. In October 1969 they took a big step forward when they adopted a sewage and waste control ordinance with Appendix A, which states that wastes of any kind may not be discharged into the waters of Lake Michigan. Recently the school board of a North Shore suburb asked for a variance of this ordinance. If this is granted, it will lead to more phosphorus going into the lake by urban runoff and it will establish a dangerous precedent for other communities to follow. Perhaps McCormick Place.

It also points out the sad fact that the Metropolitan Sanitary District has not established a flood control policy. Mr. Vinton Bacon, who is in the audience, former General Superintendent of the Metropolitan Sanitary District, and the staff have urged adoption of such a policy for the past two years. Action is urgently needed in this huge sanitary district, especially in an area of 57 square miles of combined sewers on the north side. In times of heavy rains combined sewer overflows must be sent into the lake to pollute it more. This is a critical matter. Can someone urge the Board of Trustees to adopt a flood control policy and start moving on it? This relates directly to the degradation of Lake Michigan.

Now, Mr. Klassen, I am speaking to you directly, I am speaking to Mr. Poston, I am speaking to Mr. Stein.

My third area of concern today is the move by the Administration to slash Great Lakes oceanic fisheries research. This is frightening, unreasonable, and very shortsighted. We all know that we have a population explosion, that millions will be starving in a matter of years. The lakes and oceans can be a source of food supply if we stop killing them off. How can the President and Secretary Hickel possibly justify cutting back on research at four laboratories? Congressman Dingell of Michigan says, "The Great Lakes Fishery Laboratory at

Ann Arbor, Michigan, is the only facility in the United States that has the capability to make immediate contribution to save the Great Lakes environment and its fisheries."

And last night Dr. Donald Mount just before he left the hotel told me that a great deal of their report was based on the material that they received from this Great Lakes Laboratory, which is in the process of being dismantled. This is one of the saddest things, I think, that is happening in this country and I hope the citizens that are not here today will do something about that.

My concern is also for the vast experience the research men at this wonderful laboratory have gained in their work on the lakes. What a waste to shut back such an agency when it is concerned with our actual survival.

I ask you, gentlemen, is this a step forward or backward?

Now, Mr. Klassen, you didn't know that I have added on a few things and I will be quick about it, but I have got to get my two cents in.

I want to ask Mr. Stein actually how much of the $800 million for sewage treatment facilities have been funded, actually funded?

MR. STEIN: I think they have all been funded. It is a question of whether they have been allocated.

MRS. JOHNSTON: All right, I didn't use the right word. Allocated, then.

MR. STEIN: How much of the $800 million have we got allocated to Illinois, do you know?

MR. MAYO: I don't know.

MRS. JOHNSTON: You don't know?

MR. STEIN: We will get you the answer.

MRS. JOHNSTON: I would like to know. I would like to know.

MR. STEIN: As far as I know, there has been no holdback.

MR. POOLE: As far as the table that was sent to me and based on Indiana's allotment, I assume it has all been allocated.

MR. STEIN: Yes. In other words, as far as I can tell, the Congress has passed this, this is an appropriation, none of the money has been frozen, it has all been made available in allocation to the States.

Now, you may have a question, Mrs. Johnston, on how much the States really can use getting this, but we have done our part. Not to make that sound like a grandoise, self-serving statement, "We have done our part," I don't think we have any choice. This is a mandatory act on the part of the Congress and we must allocate in accordance with a strict mathematical formula set forth in the statute. That has been done.

MRS. JOHNSTON: Do you have the adequate staffing to do this? I read just a little article that said you did not, recently. But do you--

MR. STEIN: No, we obviously, with the numerous new applications coming in, have to build up our staff. As a matter of fact, last week we spent a delightful week before the Appropriation Committees of the House and the Senate. Among other things we were asking for additional people to do this work and we expect to be able to handle this.

MRS. JOHNSTON: Then we do expect, I can tell people, students that I am going to talk to within the next couple of months, that we are going to use the $800 million for sewage treatment facilities?

MR. STEIN: What you can say is that $800 million is available. The question of whether we use it or not is if approved applications come forward.

MRS. JOHNSTON: I see.

MR. STEIN: And there has been some question, and I think this is fair to state, that when you get an increase such as this there may be a little time lag for this to be taken up. You have to recognize that last year the Federal program was $214 million.

MRS. JOHNSTON: Right.

MR. STEIN: We went up to $800 million. And I have been in a variety of grant programs for many years. Unless the pipeline is filled, you ordinarily do not go without a little lag from one level like that to another. But I suspect if the need is there that pipeline will fill in very rapidly.

MRS. JOHNSTON: Very good. Well, I appreciate your explaining that to me, Mr. Stein.

Also I had a question directed to you also. You know, we have had a special committee on nuclear discharges and the thermal pollution aspects of powerplants and reactors and I was very much disappointed that we weren't getting a report today. I understand that Mr. Kittrell has retired. Who replaces him and why don't we get a report today?

MR. STEIN: Well, again, Mr. Kittrell, of course, is retired, and I have worked with Mr. Kittrell for most of his career. He has been one of our best men in this and many other areas of the country.

That report has served its purpose. Now, the issue that we are facing, this is the issue they took up with Mrs. Botts, but just bear with us on this because this is a very important thing. We are striving to get the judgment of all the biologists and fisheries experts and water experts we can to come up with a meaningful, workable thermal policy or thermal requirement. I have found that that is not a very easy job.

We have put in a lot of work. As a matter of fact, this morning after breakfast, if you asked how I spent my time, I was discussing this with Mr. Purdy and Mr. Poole on the Great Lakes. I have indicated to you we have what we think is an approach on the Ohio River. We have an approach, at least what we think is an approach in the State, on Biscayne Bay. I have not quite worked this out with that series of southern States I was talking to you about. I don't have it at this stage,and I will give you that, with South Carolina, North Carolina, Georgia, Alabama and Mississippi. And the difficulty in this policy is the differences in the points of view may be small, but they are significant. We do not have this completely worked out with the lake States yet and this is a very, very high priority item.

Let me try to tell you something here. It is easier, as it has been in pollution control, to deal with something like this on a river rather than in a complex system such as a lake of this kind. I don't think it is surprising that we arrive at some temperature judgments on rivers first. But now we are tackling this and I think if you wait until the end of the meeting we will have a discussion as to when we are going to get together to try to iron out the differences in this thermal policy. No one realizes the urgency of this more than I do.

And again I hope you would realize the complexity of the problem, the differences of sincere honest testimony we are getting--

MRS. JOHNSTON: I do, I do appreciate that.

MR. STEIN: --and the fact that if we are going to make this work, what I believe we have to do is we have to come to an agreement among the four States represented here and us and none of us can put out our own. And with these people getting these diverse signals as well as I do, we have our work cut out for us.

But let's see how well we can manage it and let's see if we can come up with something.

MRS. JOHNSTON: Thank you very much, Mr. Stein.

I just have a couple of more things. I just wanted to point out that in a publication of the FWPCA it points out that the cost of electricity to the consumer because of the use of evaporating cooling towers would increase approximately one percent. So I think we can all afford that.

Mr. Klassen, may I ask you a question? You have been in a--

MR. STEIN: Let me stop you there just a moment, please. The difficulty that we have in this stuff is just what you said here, and if I can take this, a microcosm. I wish the question of added cost with wet cooling towers was as simple as you stated it there. If this were so and all the experts agreed on that, we would be in wonderful shape. The point is I can scarcely get two people to agree with this, whether this won't create other problems, they are not agreed on cost, and so forth.

I didn't mean to really interrupt. I know you are talking to Mr. Klassen. But what I want to emphasize, you may hear these figures, but they are not universally held or even held by a significant consensus of the profession.

Thank you. Go ahead.

MRS. JOHNSTON: Well, thank you. I just want to ask one of Mr. Klassen.

How do you know what Abbott Laboratories is dumping into the lake in the wintertime and on the five days during the rest of the year, the five days in the week that you do not sample up there?

MR. KLASSEN: We don't know other than the reports that we get from them, like every industry, because we cannot be there around the clock at all times. We have got to rely on the reports that we get from them and hope that they are honest enough to be reporting what the results are.

MRS. JOHNSTON: All right. Thank you.

Now, there is one more for Mr. Stein, I believe. There have been published reports of a feud between the FWPCA and the U. S. Attorney's office. Are these reports true and, if so, how can this situation exist at a time when pollution enforcement action issues are direly needed?

MR. STEIN: Well, one, ridiculous. Of course not. We are one Government and we are one staff, and as far as I am concerned I am on the telephone with the Department of Justice practically every day in the week. As a matter of fact, if there is going to be any feud, there was one call from the lawyers back in Washington that Mrs. Piere told me about that because of the President's meeting I couldn't answer. You ask some of the dischargers whether they find any difference between the Department of Justice and the other.

I can't think of anything that is more spurious than that. We are working just as closely as I have ever worked with anyone and the people who handle these cases in the Department of Justice, at least the senior people, are people I have worked with for over 20 years and I regard them as close and valued colleagues.

MRS. JOHNSTON: May I read you just one little thing and then I have taken too much time, I realize. This was from this morning's Tribune.

"In Switzerland companies must have a license to take water from the lakes or rivers and be licensed to pump the used water back, but government can always threaten to cancel licenses."

MR. STEIN: Do you know what the shape of those Swiss lakes are? I hope we don't come to that.

MRS. JOHNSTON: Thank you very much for letting me be here.

MR. PURDY: Mr. Stein.

MR. STEIN: Yes.

MR. PURDY: I would like to comment with respect to the utilization of the construction grant funds. I don't want anyone to leave here thinking that there is a question as to whether or not Michigan can use its full allotment.

We have made State offers now involving some $60 million since June of last year. We have in the pipeline now some 160 separate projects with an eligible construction cost in the neighborhood of $320 million and this would be eligible under the 50 percent program for $160 million of Federal grant funds.

Michigan's allocation this year is $33 million, so we expect to fully utilize the $33 million and to prefinance some of this with our clean water bonding funds. So we will use it; we will put it to work and put more to work.

MR. MAYO: One other brief comment. In an effort to gear up to handling the increased construction grants load, the Great Lakes Regional Office was authorized an additional 14 or 15 positions. Most of those positions are already filled, the people are on the job, so we don't anticipate that there is going to be any lag in handling the increased load of applications as a consequence of inadequate staff on the part of FWPCA.

MR. STEIN: Any other questions?

If not, Mr. Klassen.

MR. KLASSEN: Off the record just a moment.

(Off the record.)

MR. KLASSEN: Is there anyone here representing

Mr. Pancoe?

Well, the Society Against Violation of the Environment submitted a statement that they were going to have someone here to read and I will submit it, Mr. Chairman, for the record.

MR. STEIN: Without objection, that will be accepted as if read.

(Which said statement is as follows:)